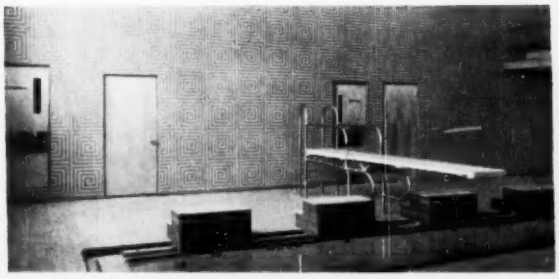
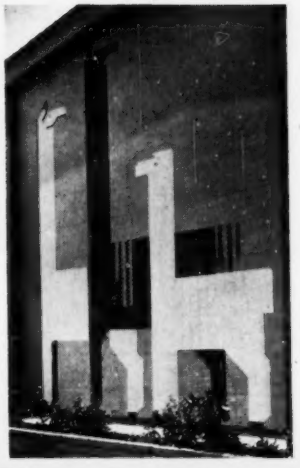
January, 1960

the AMERICAN SCHOOL BOARD JOURNAL

a periodical of school administration





USING WALL TILE IN SCHOOLS

(see page 32)

ANNUAL SCHOOL BUILDING ISSUE

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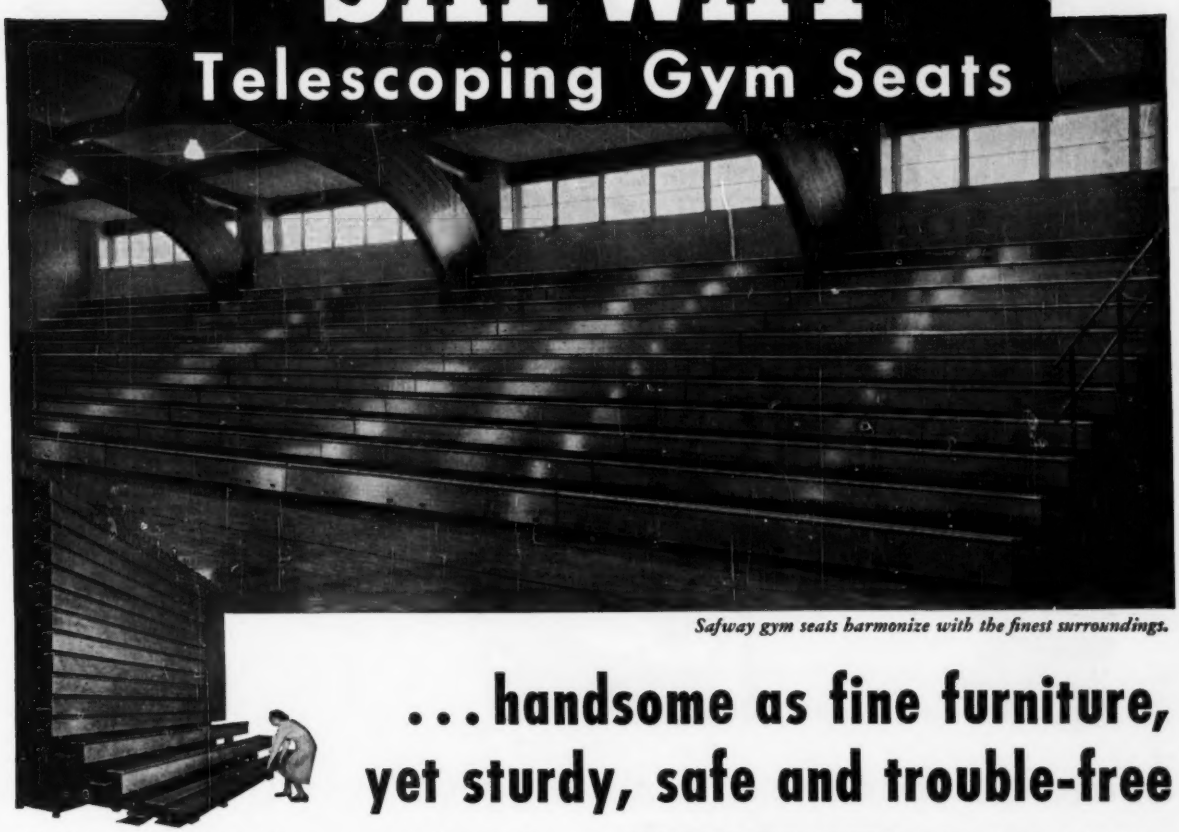

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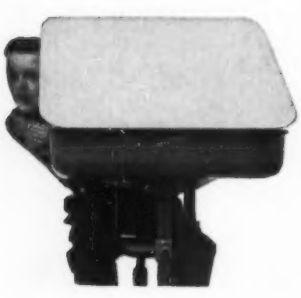

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Your JOURNAL *for January...*

This 37th annual school building number of your JOURNAL discusses some of the more challenging areas and difficult problems that you may encounter in planning and building your new schools during 1960.

In this issue the subject is divided into two parts: (1) school construction (pg. 11) and (2) school design (pg. 24). Under school construction you'll find reviews on three outstanding schools as well as a report on mobile classrooms and their uses.

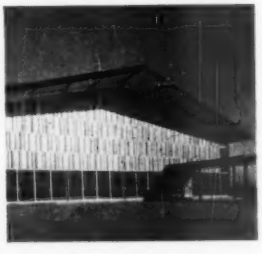
In the second area we've featured some ideas which we believe you'll find of considerable importance in school planning. Among these are:

1. Eight general requirements of a new school building (pg. 24).

2. Use of wall tile in schools. When a school has been designed, the architect has the very important job of deciding which finishes to use on the wall surfaces. Because of its beauty and low maintenance cost, tile is a popular choice. Read and see how wall tile can be used economically and satisfactorily in your new school (pg. 32).

OUR COVER...

The use of wall tile in schools is becoming increasingly popular. Turn to page 32 for a picture report on the various ways wall tile can be used in your new school.



3. In Eugene, Ore., the school board appointed a contractors' committee to advise the board and aid in selecting materials for the new school. This discussion demonstrates how this unusual program promoted understanding and won the support of the citizens of Eugene (pg. 26).

4. It is the major responsibility of the school administrator to make surveys and prepare the educational specifications for his school. Here is a very basic explanation of what educational specifications are and why they are needed (pg. 30).

We also hope you'll have an opportunity to examine several other helpful articles, including one on buying cafeteria equipment (pg. 39).

These, of course, are only the highlights for this month. We believe you'll also find many other feature articles and departments worthy of your attention.

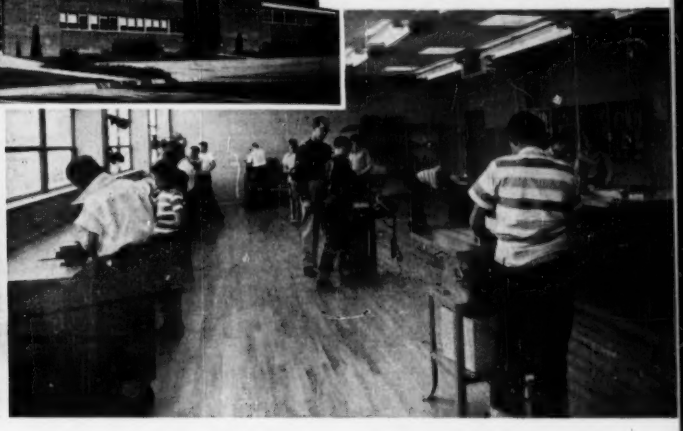
for February...

The importance of teaching foreign languages in our schools has been generally recognized by school administrators, but a foreign language program also presents many problems. The JOURNAL brings you an opinionated discussion on the need for reconstructing foreign language courses in our schools to insure a continual program, despite teacher resignation.

The Editor

Pedigo Useful Arts School, Pratt, Kansas; Thomas-Harris-Calvin, Wichita, Kansas, architects.

(Below, L) Main woodworking shop; (Below, R) Junior High shop; both areas floored with conventional strip Northern Hard Maple flooring.



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Woodworking shop, Barrington School, Barrington, Ill. Architects, Perkins & Will, Chicago. Patterned floor of Northern Hard Maple, laid in mastic. Photograph, courtesy Hedrich-Blessing, Chicago.

SPORTS

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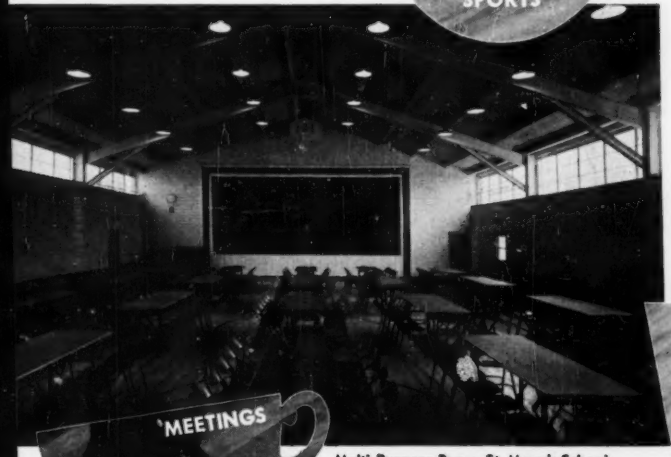

MEETINGS

Multi-Purpose Room, St. Mary's School, Hammond, Ind. Architects, Bachman & Bertram, Hammond. Conventional strip flooring of Northern Hard Maple.

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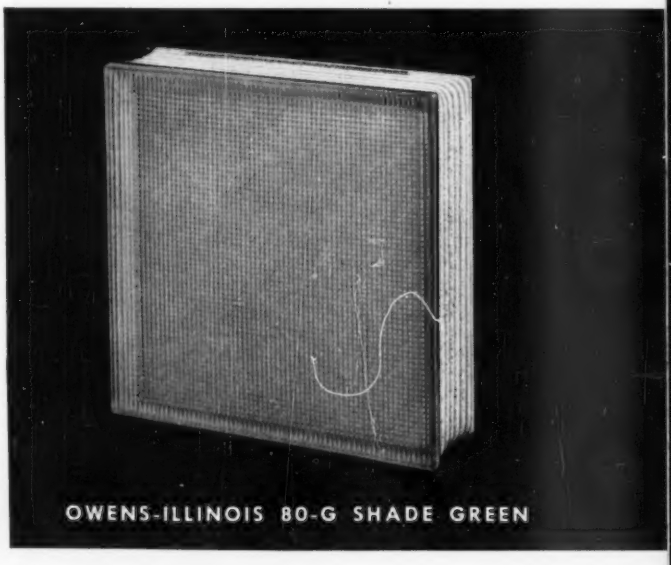

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ASSOCIATION NEWS

BENSON, ROCKEFELLER WILL SPEAK AT AASA CONVENTION

Secretary of Agriculture Ezra Taft Benson has accepted an invitation to speak at the devotional program for members of the American Association of School Administrators Sunday morning, February 14, at their 1960 convention. The meeting will be held February 13–17 in Atlantic City, N. J.

Another acceptance to speak to the school administrators has come from Nelson A. Rockefeller, governor of the state of New York. His speech Sunday night will concern America's economy and educational finance, particularly finance at the state level.

Governor Rockefeller will be the first of three general session speakers to discuss school finance. On Monday morning, February 15, President George Romney of American Motors Corporation will take up local school finance, and Representative Lee Metcalf from Montana will speak on responsibilities of the federal government for financing the public schools of America.

Also on Monday morning, Virgil M. Rogers, dean of the school of education, Syracuse University, Syracuse, N. Y., will be a general session speaker. He will describe the educational and architectural exhibits which will be displayed in the Atlantic City Auditorium and will discuss their usefulness to administrators.

AASA REQUIRES GRADUATE STUDY

On May 13, 1959, the National Council for Accreditation of Teacher Education voted to undertake to strengthen its accreditation of programs for the preparation of school administrators, on the following conditions: (1) that accreditation in this field be done as a part of the regular operation of the Council, and (2) that the American Association of School Administrators provide the extra resources for this effort. This action was taken by the Council at the request of the AASA. The special interest of the AASA in this matter stems from the action taken at its 1959 annual convention as follows:

Beginning on January 1, 1964, all new members of the AASA shall submit evidence of successful completion of two years of graduate study in university programs designed to prepare school administrators and approved by an accreditation body endorsed by the Executive Committee of the AASA.

COMING CONVENTIONS

Jan. 11–13. Minnesota School Boards Association, St. Paul Auditorium, St. Paul, Minn. Secretary: W. A. Wettergren, Box 367, St. Peter, Minn. Attendance: 2500. Exhibits.

Jan. 17–19. Louisiana School Boards Association, The Roosevelt, New Orleans, La. Executive Secretary: Fred G. Thatcher, Box 8986, University Station, Baton Rouge, La. Attendance: 500. Exhibits, educational only.

Feb. 13–17. American Association of School Administrators, Atlantic City, N. J. Executive Secretary: Finis E. Engleman, 1201 16th St. N.W., Washington 6, D. C. Attendance: 20,000. Exhibits.

Apr. 24–27. National School Board Association, Chicago. Secretary: W. A. Shannon, 1940 Sheridan Road, Evanston, Ill.

NOONTIME, U.S.A. The clock strikes twelve—all America steps out to lunch. In company cafeterias employees have a welcome chance to relax and associate with other fellow members. Halsey Taylor is in this picture—has been for years—with modern cafeteria coolers that speed service and provide health-safe drinking water. Plant and management know that whether it's a cooler or a fountain, if it's Taylor-made it's always dependable! *The Halsey W. Taylor Co., Warren, Ohio.*

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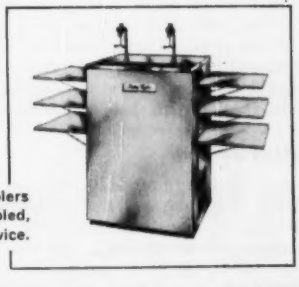

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N.S.B.A. REPORT

Evaluation Project Receives Grant

PETER PROUSE
Associate Executive Director

President Robert E. Willis recently announced that a grant of $75,000 has been made to the National School Boards Association by The Fund for the Advancement of Education, to finance a joint project of the NSBA and the American Association of School Administrators on the evaluation of school systems.

The grant will permit completion of work already begun by the two organizations on the problems of system evaluation. In earlier phases, two publications were issued: *This We Believe*, a joint "reaffirmation of belief in the public schools," which set forth philosophical foundations for the policies and practices of public education; and *Judging Schools With Wisdom*, which described 12 basic criteria for the evaluative process.

Project Purpose

The purpose of the project will be to develop, and make available to school board members, professional educators, and others interested in public education, a series of publications describing how a total school system can be effectively evaluated. The publications will be prepared as a series of "evaluation profiles" of school systems which have been identified as possessing superior school board and professional leadership, and which have carried on successful comprehensive evaluations in the past. Some 12 to 15 such "profiles" will be prepared in the next year and distributed by the co-operating organizations to local boards and communities.

Selection by Jury

A jury of superintendents and board members representing the executive committees of the two sponsoring organizations will select some 100 school systems which, in their judgment, are outstanding both in terms of the quality of the education which they provide, and of the evaluation techniques which they are currently using. Details of the approaches, methods, and instruments used by these systems in their evaluative processes will be solicited, and the comprehensive reports will be studied by both jury and project staff members for the purpose of selecting between 24 and 30 pairs of systems, matched for their district sizes and community characteristics.

In the next phase of the project, trained observers will visit the subject districts, to make firsthand observations and prepare each community "profile." A carefully designed guide, based upon the criteria set forth in *Judging Schools With Wisdom*, will be developed to assist these observers as they work on the preparation of the district case studies.

In their joint proposal submitted to The Fund, the NSBA and AASA stated: "Although many instruments, documents, techniques, and approaches to evaluation have been developed, it is believed that this project can result in a considerable contribution to the whole problem of judging schools. In fact, it is believed that through the case study method much sounder procedures will evolve at local levels than can be achieved in other ways. The plan should result in a series of evaluation profiles which would be designed to describe concisely and concretely not only the over-all picture of how selected school systems have carried on comprehensive evaluations, but the total mosaic of detail so essential to valid judgments will be thrown into bold relief. Only thus can quality and quantity assume their rightful proportions."

Joint Direction

Executive Director W. A. Shannon of the NSBA, and Executive Secretary Finis E. Engleman of the AASA, will exercise joint direction of staff personnel to be employed in carrying out the project. The two organizations are now in the process of selecting a project director. ■

NSBA Assumes Citizens Functions

On December 2, John Hersey, Chairman of the Interim Board of Trustees of the National Citizens Council for Better Schools, and Henry Toy, Jr., President of the organization, announced that the Council would terminate all of its activities by the end of 1959.

Later that same week, it was announced by Executive Director W. A. Shannon that the National School Boards Association had been designated by the Council as the depository of the materials and publications produced by the Council over the past decade on citizen action for the improvement of local schools. The NSBA, he said, would also serve as a clearinghouse for requests for information which are expected to be made by the public in large numbers for some time to come, in response to the Council's "better schools" advertising campaign.

In making his announcement, Mr. Shannon noted that the termination of the National Citizens Council leaves the National School Boards Association as the only major organization composed entirely of laymen which is devoted to the purpose of improving citizen leadership of public education. "The Citizens Council," he said, "has rendered major service to better public schools. The National School Boards Association, as the depository of Council materials and as a clearing house for public requests for information about better schools, will do its best to help continue some of the important functions carried on so ably by the Citizens Council in the past."

Council materials being sent to NSBA headquarters for distribution include hundreds of case histories of successful citizens committee activity, as well as factual booklets on a wide variety of public school problems. The NSBA staff will be augmented shortly to take care of the increased correspondence resulting from its assumption of Council functions. Available office space on the third floor of the headquarters building in Evanston is being made ready for the expanded activities of the Association. ■

Walt Disney Elementary School, Tullytown, Pennsylvania. Architect: John Carver, Philadelphia, Pennsylvania.

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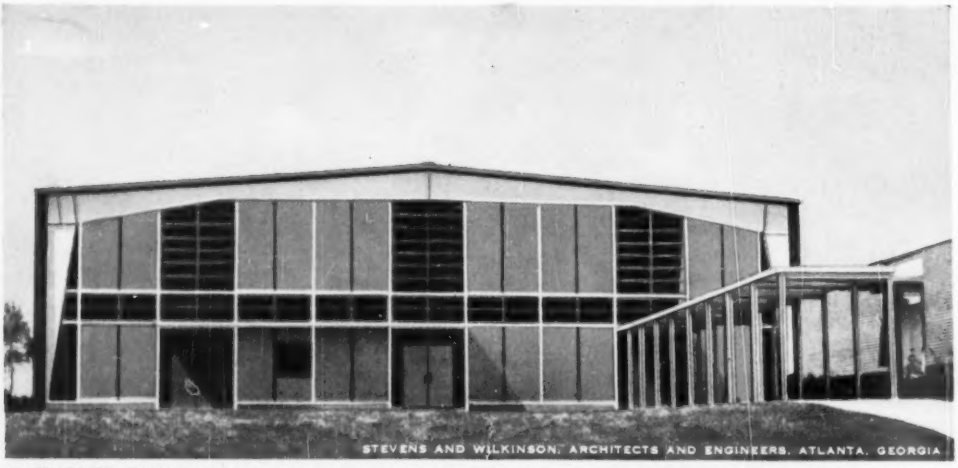

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JOURNAL
January, 1960

school planning and building 1960

1. buildings...

a Massachusetts high school which modified the "campus" plan to achieve an atmosphere of the small school

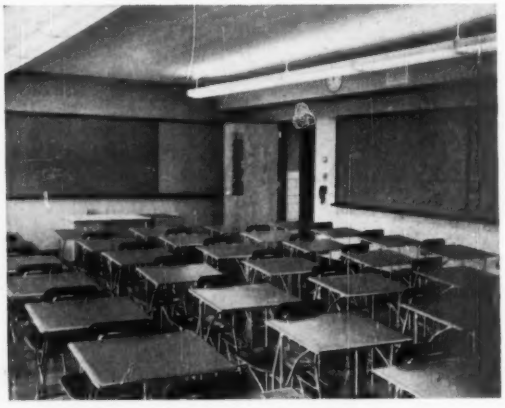
a high school in Michigan that serves a comprehensive program as a nucleus for a rapidly growing suburban community

a cleverly designed K-6 plant in California which concentrated on "perfecting" light, air, and acoustic control in each teacher station.

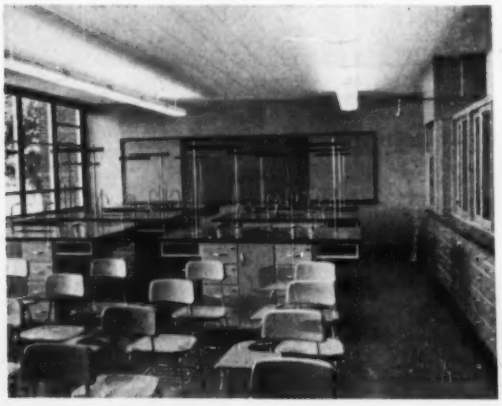
a report on the "new" mobile classroom units so popular in the eastern United States.

Front view of the new high school in Dedham, Massachusetts. Based on a modified campus plan, Dedham High is composed of several "small" schools for individual age groups.

The woodworking shop, part of the "noisy area" adjacent to the athletic field.



Decorative colors on walls and furniture give gay relief to nearly-square classrooms.



One of the science labs. The large expanse of windows brings in light and air.

A view of the home ec room. Glazed wall finishes and terrazzo floors provide durability.

A modified campus plan —

Dedham High School

JOHN P. FARRELL
High School Building Committee, Dedham, Mass.

The problems that confronted the High School Building Committee of Dedham, Mass., were typical of those confronting so many communities throughout the country. Inadequate and aging facilities, an expanding high school enrollment, a limiting budget, and an urgent time problem were, of necessity, prime considerations.

With a combination, however, of specialists — architectural, engineering, and educational — a progressive plant in contemporary school design was developed.

A modified campus plan for 1000 pupils and 42 teacher stations was conceived as the basic pattern to be followed, and the architectural research and final development of the project resulted in an atmosphere of several "small" schools for the individual age groups.

Provisions were made for future growth and adjustment in the academic program based upon the continuing changes in the educational interests and needs in the various age groups. However, those who planned this high school recognized the wide range of student needs as well as the possible use of its facilities by the adult population of the community.

Three Fields of Activity

Meticulous study of all facets of efficient design and construction revealed three integrated fields of activity in one over-all plan.

The so-called "noisy" areas, such as woodworking, metalworking and other shops, music training, auditorium, cafeteria, kitchen and gymnasium, are combined in one wing and located adjacent to the new athletic field.

Administrative offices and the student health facilities are located in the central portion providing a buffer and separating the "noisy" areas from the library, reading room, classrooms, laboratories and audio-visual aid rooms which require a quiet environment. In short, complete segregation of areas has been harmoniously and efficiently achieved.

The spacious auditorium foyer with its rich redwood panelling and interesting flagstone floor welcomes the visitor with an air of clean modernity. An excellent acoustically balanced auditorium with fully equipped stage, storage and dressing rooms, provides for the seating of approximately 1000 in elevated rows of stationary seats. Of these 1000 seats nearly 200 chairs have folding tablets for ease in taking notes during lecture assemblies. A large flat floor area has been provided in front of the stage which can accommodate a symphony orchestra, small exhibitions, demonstrations, and pageantry. This flat area is also provided with movable chairs for increased seating capacity.

The music training and practice areas have been closely co-ordinated with the auditorium and stage areas. The cafeteria, serving 500 students at one time, with its superb gleaming stainless steel kitchen, is excellently equipped for student food service, for banquets, dances, and many extra-curricular activities.

The wing containing the auditorium, cafeteria, shops, arts and crafts, and gymnasium with their broad approaches and complete facilities is so located and developed that any of its elements may be used either individually or collectively in the evening or during periods when school is not in session without interference with or involving the balance of the educational units.

Strategically placed are the indoor physical education facilities, such as showers, lockers and dressing rooms, which have been conveniently located adjacent to the new sports and athletic field for use in both indoor and outdoor interscholastic and intramural sports.

The administrative offices with complete appointments for efficient management, principal, vice-principal and guidance offices, and the student health section with its examination and dressing rooms, dental care, and nurse's office are centrally located for practical and effectual supervision and convenience.

Academic Units

But the heartbeat of the entire project lies in the academic or "quiet" core of the project.

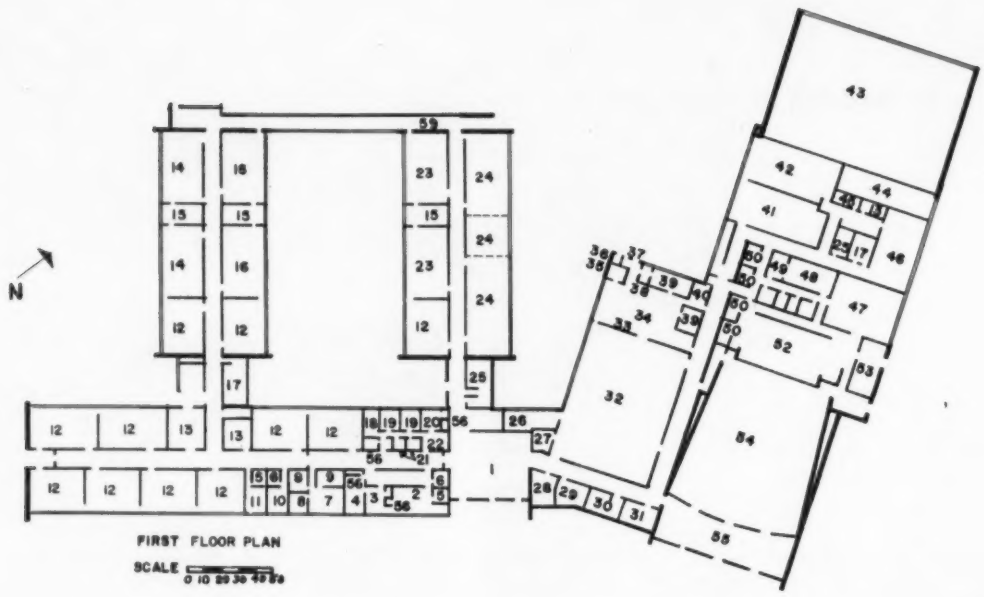
Here the large expanse of windows brings a sense of light and air and the illusion of being outdoors.

The generous use of acoustical materials and resilient flooring reduces foot traffic noises to a minimum and produces a quiet, studious atmosphere.

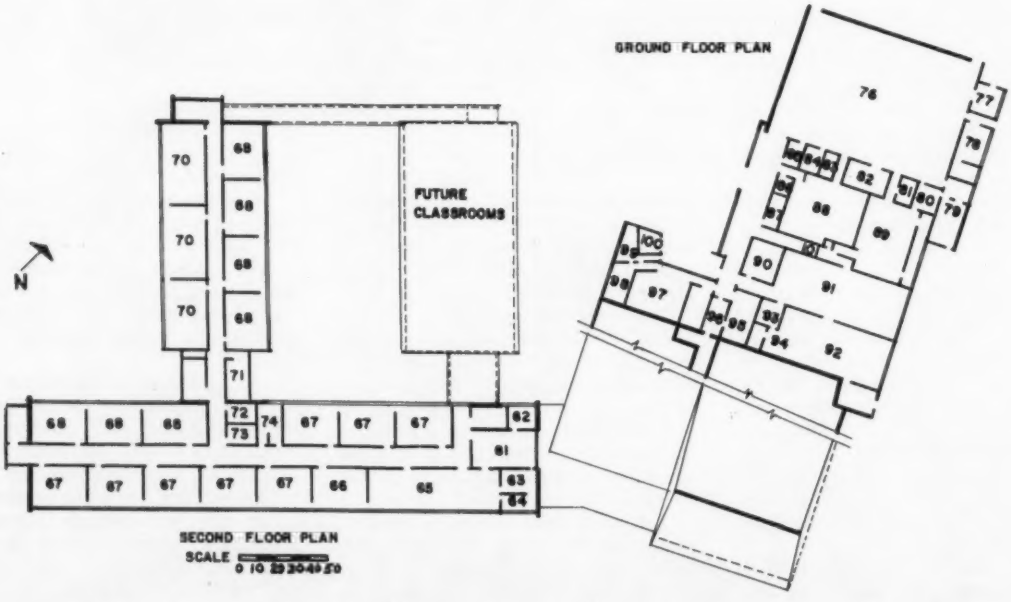
The grouping of academic units such as chemistry, physics, biology, commercial education, and home economics are readily accessible and so located as to reduce student travel to a minimum, since the student enrollment is large enough to keep the facilities fully occupied at all times during class sessions, which makes for "busy" class changes.

The classrooms are nearly square and flank double-loaded corridors. Scientifically determined decorative colors for walls and furniture give gay relief from the usual drab institutional colors of the past.

"Hard use" areas are finished with



1. lobby
2. general office
3. vice-principal
4. principal
5. vault
6. supply
7. guidance (library)
8. guidance (offices)
9. guidance (small group)
10. men teachers
11. women teachers
12. general classroom
13. general storage
14. chemistry
15. preparation & storage
16. physics
17. boys' toilet
18. dental health
19. health exam.
20. nurse
21. health dressing room
22. waiting
23. biology
24. homemaking
25. girls' toilet
26. table & chair storage
27. dishwashing
28. conference
29. women's toilet
30. men's toilet
31. conference & coats
32. cafeteria
33. serving
34. kitchen
35. cold storage
36. rubbish
37. milk
38. office
39. kitchen storage
40. employees
41. general arts
42. arts & crafts
43. upper part of gym
44. mechanical
45. instructor
46. mechanical drawing
47. band room
48. instrument
49. music teacher
50. practice rooms
51. dressing rooms
52. stage
53. stage storage
54. auditorium
55. foyer
56. toilets
57. janitor
58. loading platform
59. tool room (under)



61. music appreciation & theory-audio-visual
62. audio-visual storage
63. listening
64. office
65. reading
66. group conference
67. general classroom
68. commercial education
69. office machines
70. typing
71. boys' toilet
72. men teachers
73. women teachers
74. girls' toilet
75. lobby
76. gymnasium
77. gymnasium storage
78. visiting team
79. varsity team
80. coach
81. male instructor
82. corrective
83. female instructor
84. gym storage
85. director of athletics
86. women's toilet
87. men's toilet
88. girls' lockers
89. boys' lockers
90. planning
91. woodworking shop
92. metal shop
93. instructor
94. tools
95. repair & storage
96. custodian
97. boiler room
98. generator & battery
99. switch room
100. transformer room
101. janitor

glazed wall finishes and pleasingly colored terrazzo floors for durability and ease of maintenance.

The beauty of the matched hardwood veneer doors and panelling selected to give them longer life are constructed for strength and ruggedness.

Lighting and Heating

Lighting problems and intensities were solved according to particular needs and electric fixtures producing general and spot illumination have a clean simple appearance consistent with modern design standards.

Individual thermostats have been used generously to secure the proper and most comfortable temperatures when the rooms are in use.

A centrally located modern boiler plant resulted in substantial savings in the sizing and routing of the heating mains and the secondary piping system, as well as simplification of the mechanical equipment and layout.

Similarly the development of centrally located electrical equipment reduced the lengths of runs to service the various electrical elements and components such as the lighting, equipment and communication system.

Both the heating and electrical systems contain many commendable features of flexibility, expansion, economy, and efficiency.

The entire high school plant is contained in a fully firesafe envelope of concrete and steel frame with emphasis on greater flexibility and economy in both construction and operation.

The crisp beauty of the masonry work, the clean lines of the multicolored curtain wall panels, the broad sweep of the entrances, all contribute to the richness and dignity of this school building.

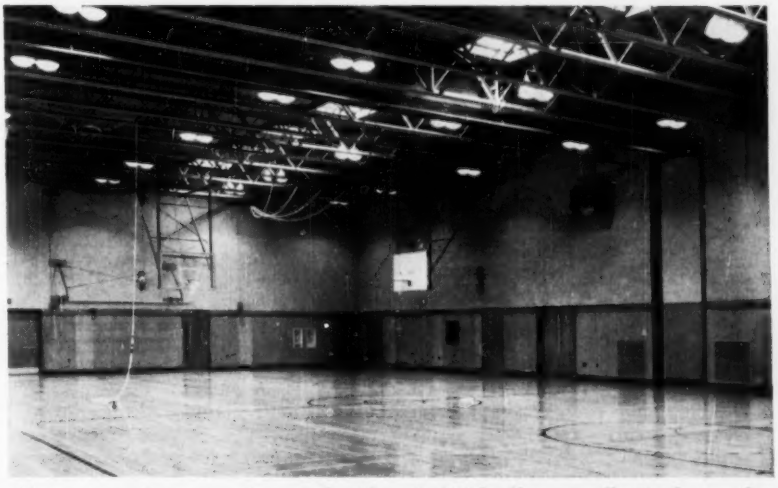
The complete facility, including all site work but excluding the athletic field, was achieved at an over-all cost of $2,250,000.00, or $1 per cubic foot or $16 per square foot.

The master plan for the new high school provides for eight additional classrooms to be constructed when future enrollments make these classrooms necessary.

The auditorium was first used in June for the graduation exercises of the class of 1959, and the entire facility was dedicated and opened for formal use this September.

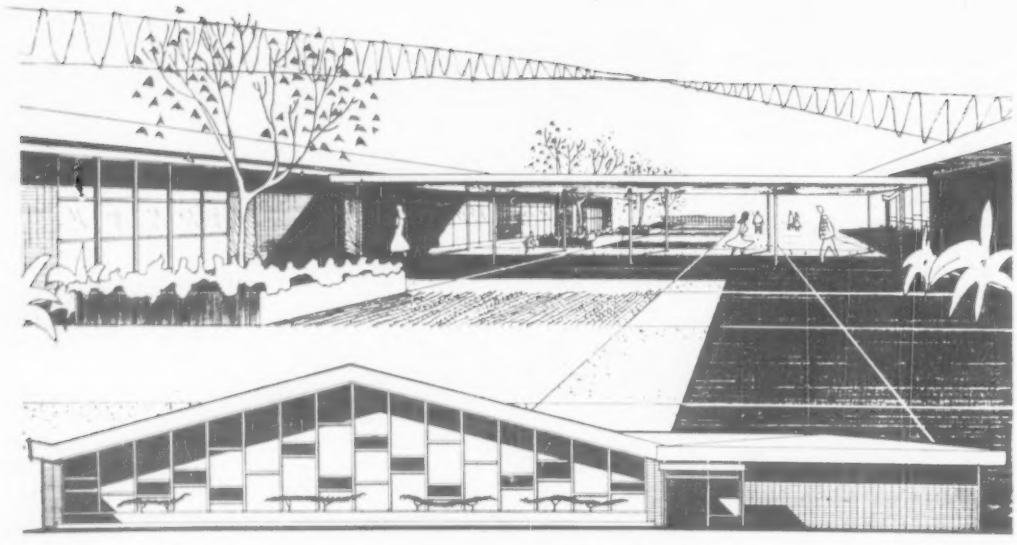
The new high school building, as it now stands, with its excellent athletic facilities, its ample parking areas and lanscaped grounds, is a significant example of modern thinking. It has captured the spirit of functional planning, and does justice to the educational values, requirements and vision of our age. ■

The acoustically balanced auditorium is fully equipped with stage, dressing rooms, and storage. It provides for the seating of approximately 1000 in elevated rows of seats.



The gymnasium can be used either individually or collectively in the evening or when school is not in session without interfering with the educational units.

The cafeteria with its stainless steel kitchen equipped to serve 500 students at one time, can also be used for banquets, dances and many other extracurricular activities.



Huron Elementary School

KENNETH R. MacDONALD
San Francisco, Calif.

Making the process of learning easier for students was the prime philosophy behind the design of the new $552,655 Huron Intermediate School in Northern California's Fresno County.

In the process of accomplishing this objective, the new Coalinga-Huron Union School District's educational plant was built at a cost of $14.92 a square foot, considerably below the amount allowed by the California Department of Finance for state-aided schools.

Huron Intermediate, the first new Fresno County primary school to go into operation, was so successful that construction has been started at Coalinga on a second, the Sunset School.

"Our new Huron school," declares Henry Bishop, district superintendent of education, "represents a significant improvement in school construction, from an educator's point of view, and certainly is far superior to anything we have been able to provide hitherto."

Bishop and other school district officials, accompanied by the architects, Marshall Mortland and D. H. Horn, and executives of the construction firm, The Remco Construction Co., made an extensive tour of Northern and Central California schools before the architects ever touched pen to paper. They also spent considerable time at the Stanford University School Planning Laboratory at Palo Alto.

"What we learned in all of our visits," Bishop points out, "has been put into the design of this new school and the result is an intermediate and primary educational structure which has attracted wide-spread attention from educational circles everywhere."

Careful design, a "bold new approach" by the architects and meticulous attention to construction techniques and details by the builders, have provided "better light, better ventilation and reduced maintenance and operating costs," according to school executives.

In addition to the low construction cost, which eases the burden on their tax-paying parents, the students at the new Huron school enjoy the added healthful benefits of air conditioning, proper light from luminous ceilings, and proper sound control.

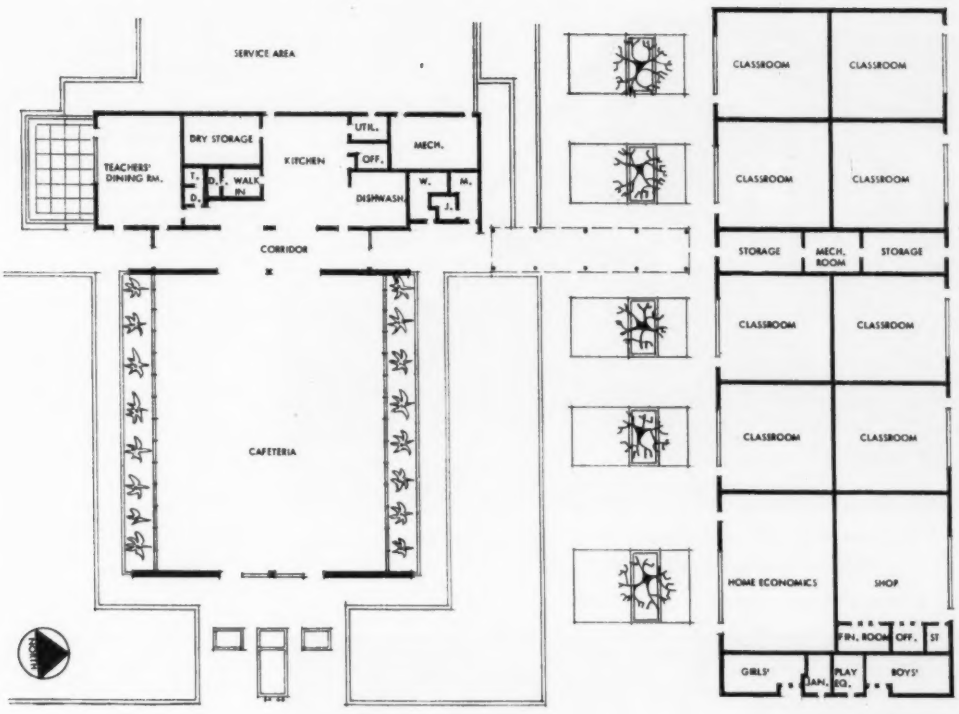
"We sought the optimum realization of space and facilities at the most reasonable cost," Bishop explains. "We wanted an exterior finish with low cost maintenance and minimum utilization of natural light.

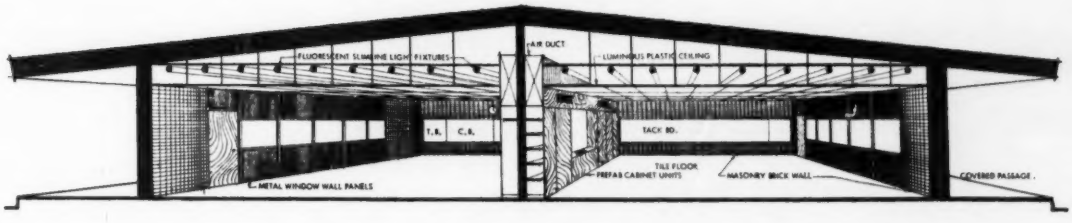
"We aimed at reducing interior maintenance and providing the best of visual aids. The luminous ceilings give us adequate and shadowless lighting in the classrooms, along with low operating costs."

The new Huron school actually is an addition of eight classrooms, a shop, a home economics room, and a large cafeteria to an already existing plant of 20 classrooms located on a 28 acre site where as late as 1946 there was only a one-room school.

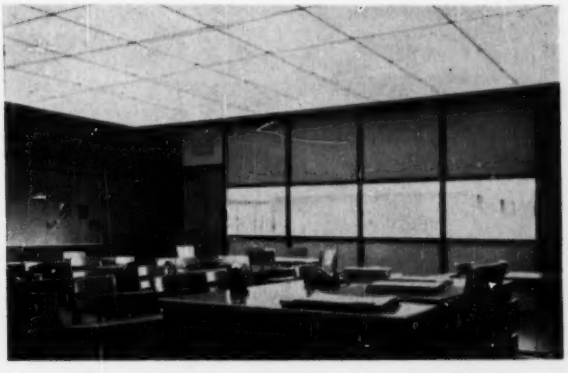
Fluorescent fixtures above a translucent plastic ceiling create a full luminous ceiling in every new classroom and provides 70 foot-candles of light on all reading surfaces.

"Natural lighting," Bishop points out, "was reduced for practical reasons. Vision strips of glass were used, rather than large area conventional windows. This cuts down on glare and eliminates dust. It also ends the need for special curtains to darken

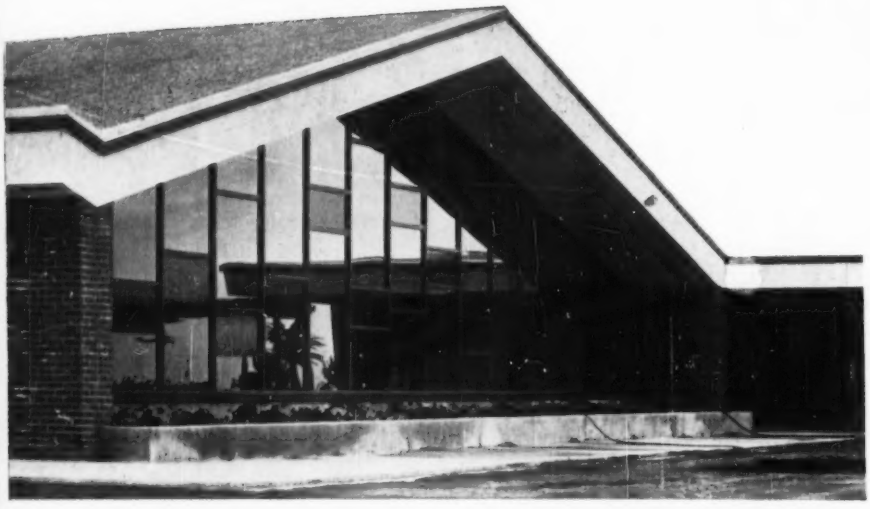




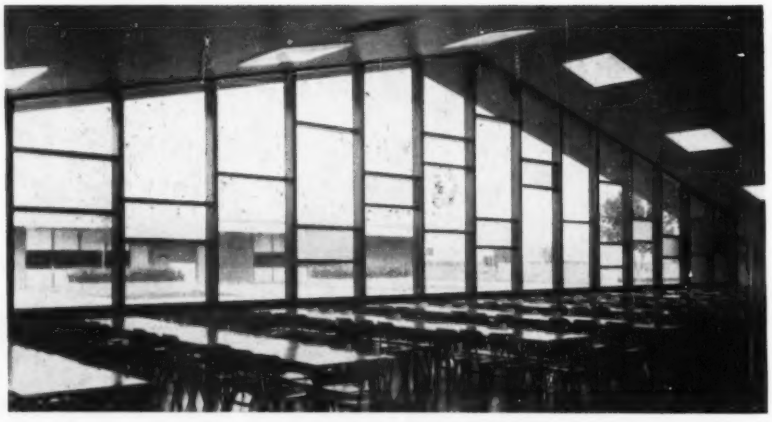
Fluorescent fixtures above a translucent plastic ceiling provide adequate and shadowless lighting in the classrooms.



Vision strips of glass instead of large windows were used in the classrooms to cut down on glare and eliminate dust.



To aid in the reduction of heat losses, insulated metal panel window wall units were used for the outside walls.



The large new cafeteria at Huron intermediate school. The wall of window units provides ample light for the room.

classrooms for movie or TV use, a cost which often can run as high as $400 per room."

The air conditioning in the new school is another highly practical feature and is used 80 per cent of the time, either for ventilating or for cooling. When thermostats register two degrees above a pre-determined setting, the cooling system goes into use.

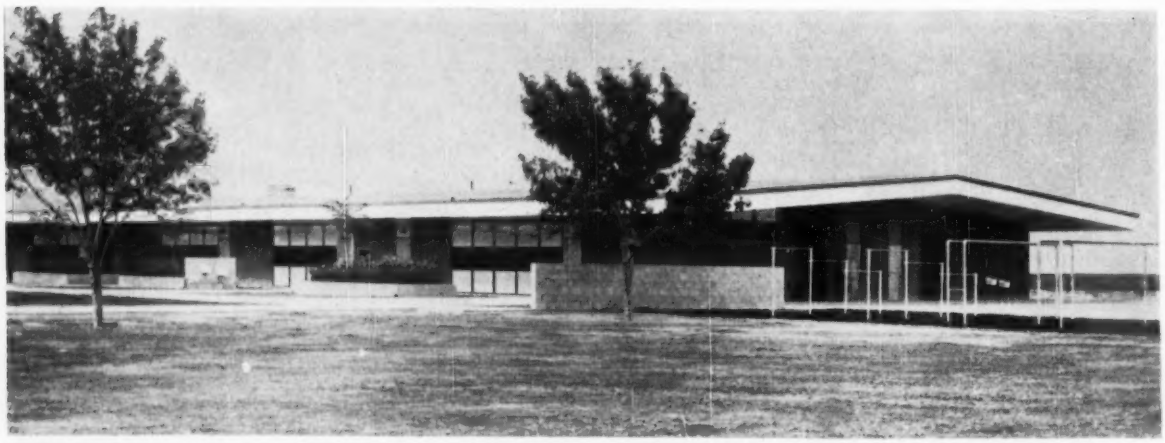
As an additional factor in the reduction of heat losses, the architects specified brick walls with insulated metal panel window wall units for the outside walls. Interior partitions are wood frame with a plywood finish.

A timer starts the air conditioning during the early morning hours in order to pre-cool the classrooms prior to the arrival of students and to remove hot air which may have collected during the previous afternoon when the school was not in use.

Construction economies also were achieved by putting two wings back to back, thus eliminating one wall and concentrating all of the plumbing, heating, air conditioning, and electrical equipment in one area.

The cost of the air conditioning, luminous ceilings, and brick construction accounted for $2.95 of the per square foot total. Maintenance, fuel, and power costs, however, will be reduced by $2,500 a year, and in 25 to 30 years, the savings will wipe out the initially high investment.

Carl Gustavson is president of the district board of trustees and Wilmer M. Forstedt is principal of the new school. ■



Exterior view of Huron Intermediate School. Superintendent of schools in Coalinga-Huron Union School District is Henry F. Bishop. Architects were Marshall D. Mortland and David H. Horn.

A new type of temporary school structure —

Mobile Classroom Units

THOMAS C. LITTLE
Assistant Superintendent, Richmond, Va., City Schools

For many years school administrators have sought some type of temporary classroom structure that would meet all health and safety standards and that would provide sufficient space to house an acceptable instructional program. Evaluative criteria for such housing have included low initial cost, low maintenance and operational costs, quick procurement and erection, mobility from one location to another, high salvage value, and a strictly temporary character not carrying a risk of becoming permanent.

Such facilities are needed in:

1. Areas of maturing population where peak enrollments temporarily exceed building capacities.

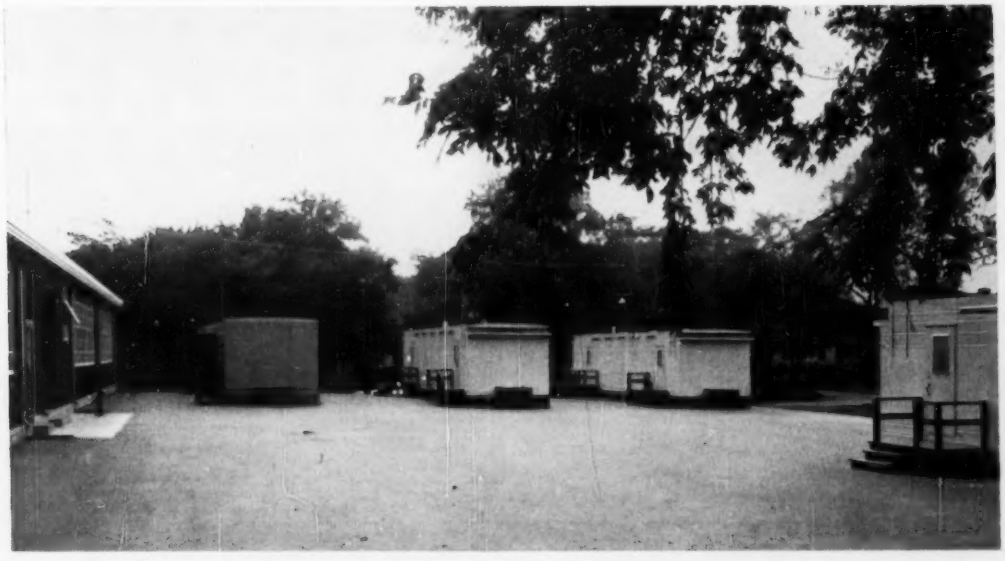
2. Areas of fluid population where influxes of temporary enrollments exceed building capacities.

3. Areas of mushrooming growth where temporary facilities are needed until permanent facilities can be financed and constructed.

A number of types of such structures are in use throughout the nation. None, however, meet completely the desired criteria. To name a few, there are portable wood units, demountable wood or metal structures, quonset type buildings, nailable steel frame buildings, and convertible residential cottages. All of these types of structures fail to meet completely the criteria of mobility and high salvage value, and with all of them there is a high risk that, once constructed, they will assume a place of permanence in the school system's plant inventory.

Recently there has come into existence a new type of such temporary facility known as the "mobile classroom unit" that has been developed co-operatively by the school people and the residential and specialty trailer industry. A number of these units are now in use in three large eastern seaboard school systems, i.e., Baltimore county, Md.; Fairfax county, Va.; and the City of Richmond, Va. These units appear to meet satisfactorily all the criteria established for them.

The "mobile classroom unit" itself is a 12 by 46-ft. steel undercarriage, aluminum skin trailer with a custom



The mobile classroom unit is a 12 by 46-ft. steel undercarriage, aluminum skin trailer with a custom designed interior.

designed interior. A wide range of interior designs can be had to meet the needs of its occupants. Heating units are self-contained and may utilize oil, gas, or electricity. Both gravity and mechanical ventilation are provided, and air conditioning is optional. The units may be stationed on a full foundation and footing or on an appropriate pier foundation. Heating, lighting, and ventilation meet national standards. Space, although at a minimum, will comfortably accommodate 30 elementary children.

Initial Cost

The initial cost of such units is relatively low when compared with costs of either permanent or conventional temporary structures. They can be purchased for as little as $5,000 per unit, delivered and placed on the owner's foundation. Foundation costs vary, depending upon local code requirements. Usually $300 to $500 will cover both foundation costs and utility connections. Maintenance and operational costs are extremely low. The aluminum shell may or may not be painted, and it should offer a long life of maintenance-free service. The units are well insulated with both reflective and conductive insulation. Fuel costs can be held to a minimum. The panelled interior offers little or no maintenance problems.

Since the units are of assembly line construction and are delivered on standard trailer undercarriages, delivery can be had in 30 days. Since the units rest on conventional foundation, it is not necessary to purchase wheels with each unit; instead, one set of wheels will serve as a carriage for as many units as may be desired and can be removed when the units are stationed. The movement of the units from one location to another is done with ease and the only appreciable cost is that of foundation and utility connections.

When the units have fulfilled their purpose as temporary classrooms, they should retain a high salvage value when converted to residential or other uses. It is estimated that after a five to ten year normal use they will retain half of their original cost in salvage value.

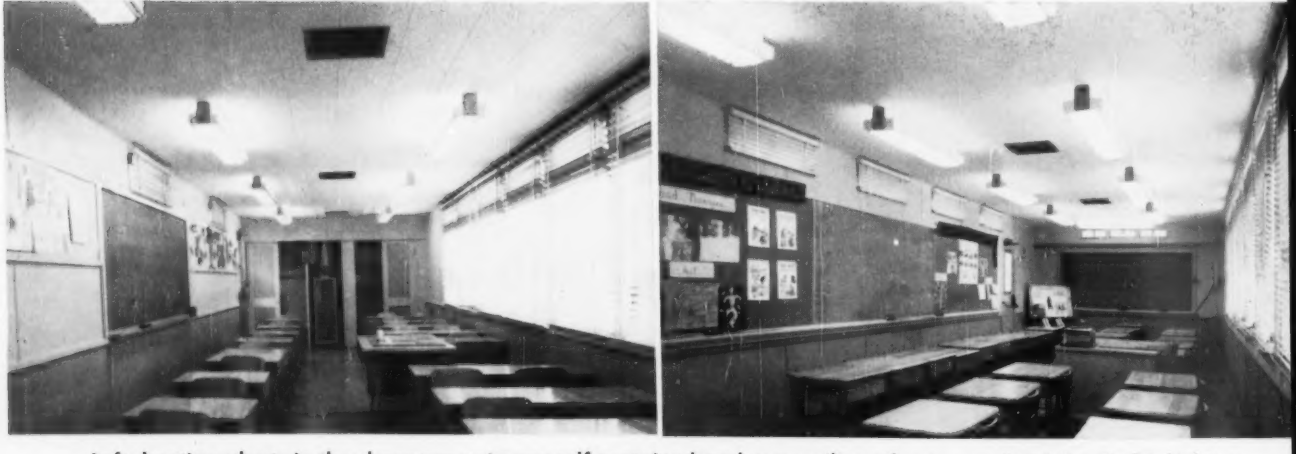
One of the most desirable characteristics of the units is their nonpermanence. Far too often temporary school structures, once erected, assume a permanence that makes it hard ever to remove them. Far too many temporary war structures still litter our school grounds. In the case of a "mobile classroom unit" it is recognized by all concerned as a temporary facility, and with its high salvage value it should encourage rather than discourage permanent construction where such is needed.

All of the units now in use in the three school systems mentioned are operated in connection with an existing school and utilize the sanitary and service facilities of the parent school. If such units should be operated as an independent school, as would be necessary in areas of mushrooming growth, until permanent facilities could be completed, a minimum of sanitary and service facilities such as toilets, office, and clinic would have to be provided. Such facilities could be furnished in matching mobile units.

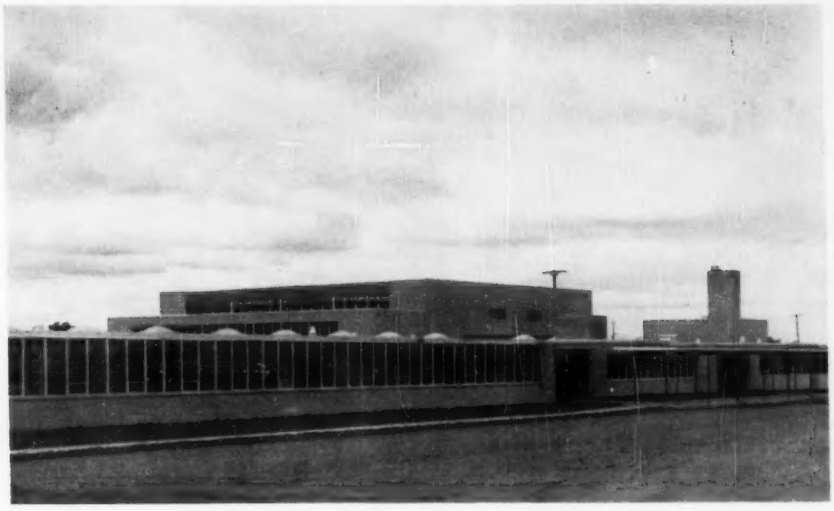
Attitude Is Favorable

The big question is "What do the users (pupils and teachers) think of their 'trailer' classroom?" A recent survey conducted by the research department of one of the using school systems found that there was no significant difference in the achievement of pupils who were taught in mobile classroom units and those who were taught in regular classroom situations. Both teachers and pupils preferred regular classrooms over mobile units, but preferred mobile units to annexes removed from the campus. The greatest objection of both teachers and pupils was inadequate temperature and ventilation control. This objection has been mainly overcome by at least one manufacturer who has substituted jalousie windows for fixed glass and who provides for immediate or future air conditioning in all units produced.

The attitude of school administrators who have had experience with the "mobile classroom unit" is, in general, favorable. It is felt that such units properly used serve a distinct need in the field of school housing. There is, however, a strong insistence from all that they be looked upon as strictly temporary and that they never be substituted for permanent housing for any extended period of time. ■



Left, heating plants in the classroom units are self-contained and may utilize oil, gas, or electricity. Right, lighting as well as heating and ventilation meet national standards.



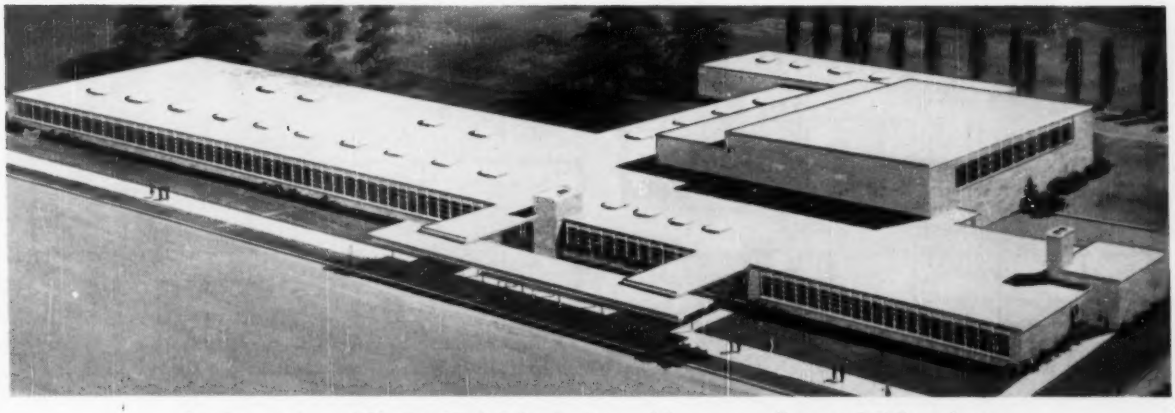
An exterior view of Haslett, Michigan, High School. Superintendent of schools in Haslett is H. M. Murphy. Architects were Louis C. Kingscott & Associates of Kalamazoo, Mich.

Haslett Senior High School

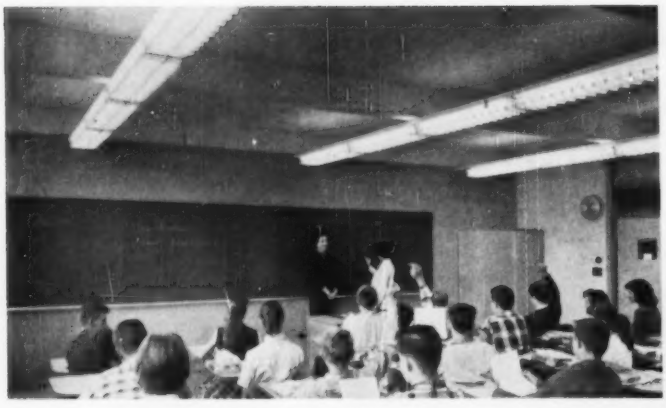
Planned for an initial enrollment of 500 students, this high school building in Haslett, Mich., is a nucleus for a future expanded structure in a rapidly growing suburban community.

Several rooms in the school have been designed for multiple purposes. In addition to serving the school's physical education program, the gymnasium serves as an assembly room and the dining area for the hot lunch programs. In connection with the latter use is an adjoining kitchen. The commons, opposite the entrance

A school that is a nucleus for a future expanded structure in a rapidly growing suburban community.



Southeast view of Haslett High School, planned for an enrollment of 500 students.



Above, one of the eight general classrooms at Haslett High School. Right, the library, with fluorescent lighting.

to the gymnasium, has been planned to accommodate a variety of student, parent and community activities.

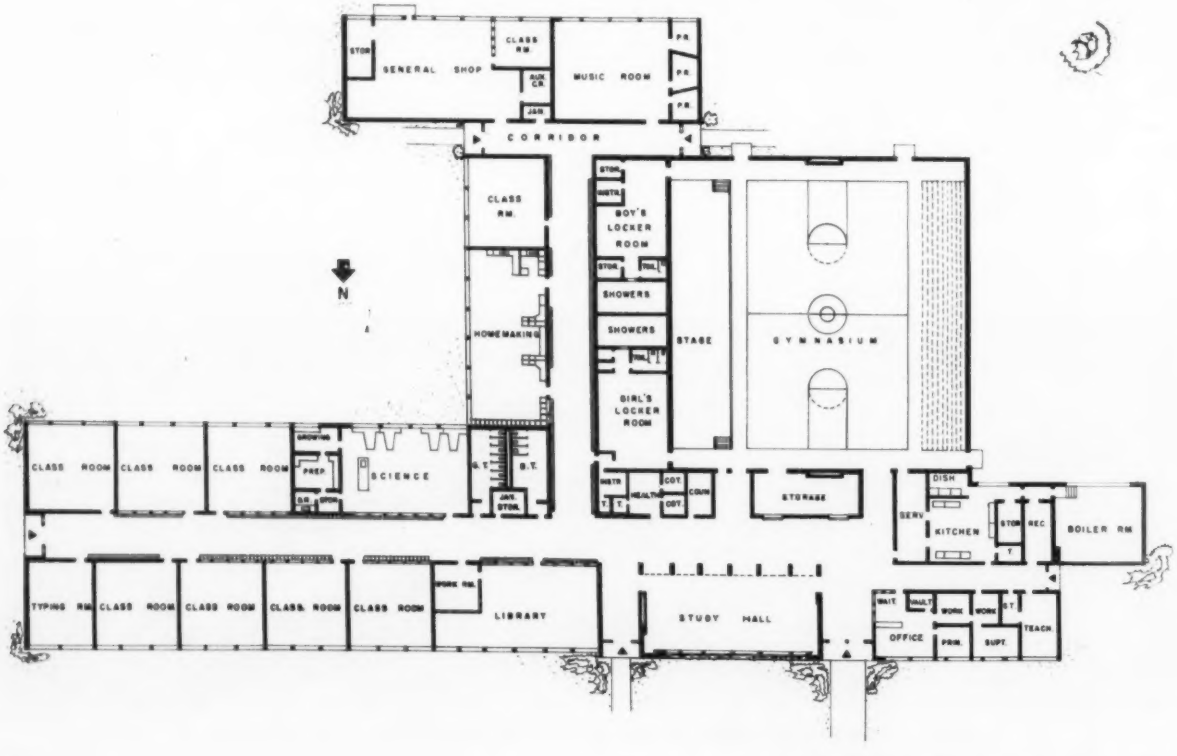
The science room was planned for adequate instruction in all science subjects at the high school level. To implement these studies, a darkroom, preparation room and growing room are located in conjunction with the larger science room.

Completing the facilities are a music room with three small practice rooms, library and study hall, general shop containing an auxiliary classroom and finishing room; homemaking room, typing room and eight general classrooms, plus an office suite, combined board of education and teachers' room, health and counseling rooms, and a boiler room.

Materials used in the building were chosen for durability, economy, and ease of maintenance. Floors in most of the public areas are asphalt tile. Where there is the possibility of damage to tile by grease or alkalies, greaseproof asphalt tile was installed. Nonslip quarry tile is found at entrances and in shower and locker rooms.

Walls are face brick in the lobby, commons, and corridors; glazed structural units are used in locker and shower rooms, and lightweight block is used in all other rooms. An acoustical formboard for the poured gypsum roof deck forms the ceilings for most rooms; over the locker area the precast concrete roof deck is exposed at the ceilings.

The exterior of the building is face brick, with limestone sills and alu-



Above, the science room planned for adequate instruction in all science subjects at the high school level.

minum sash. Hollow metal doors and metal frames are installed throughout the building.

Heating equipment was chosen to fit the needs of each section of the building. This includes unit ventilators in classrooms, warm air diffusers in the gymnasium, radiant floor panels in shower and locker rooms and fin-type radiation in offices, kitchen, and other service areas. Most rooms have fluorescent lighting fixtures. In the gymnasium, corridors, locker rooms and storage rooms, lighting is incandescent.

Total cost of Haslett Senior High School was $524,374.36, or $12.45 per square foot and 70 cents per cubic foot. ■

A view of the home economics room, with the cooking area on the right and sewing machines on the left.

One of the rooms planned for multiple purposes, the "commons" accommodates a variety of student, parent and community activities.

2. planning...

Requirements of a new school building—

Eight "Y's" of School Planning

WILLIAM LYMAN
Smith & Smith, Architects, Royal Oak and Iron Mountain, Mich.

Suitability

To fit the school to the site

The first requirement of a new school building is that it fit the intended educational program. It must also fit the particular site for which it is planned. No good school is ever designed in a vacuum; there must be a broad purpose and detailed educational program behind it. Once the program has been established by the board, the superintendent and his staff, it is the responsibility of the architect to develop a building plan which fits this program and the proposed site. This building plan must solve *your* problem; be wary of a plan which may have been constructed elsewhere. Don't be caught buying a white elephant at a bargain price.

Utility

To provide for long-range use

The utility of a school building is its usefulness over the full period of its life. It cannot be accurately measured until the school has been in use for a relatively long period of time. In the design and planning stage, it is impossible to anticipate all the many situations that may occur in the day-to-day operation of a school. It is not difficult to plan a building to accommodate a particular educational program but if we accept the theory of constant change in all human activity, we must recognize that even the most farsighted planning may someday prove to be ill-conceived. Collectively, the board, the superintendent and the architect must do their best to provide for long range utility.

Flexibility

To allow for adjustments

When we speak of flexibility we should speak about two kinds: initial flexibility and long-range flexibility. The first is necessary because no two days in a school year are the same and no two teachers are alike. A good school building should have sufficient

inherent flexibility to permit countless daily adjustments to take place; it should be designed to accommodate a particular educational program but it should not be designed as a straightjacket. Long-range flexibility requires that the architect choose such structural, mechanical, and electrical systems as will permit building modifications to be made in future years as basic changes occur in the educational program. Because this kind of flexibility may add to the initial construction cost, the architect should be instructed as to what future changes might be expected.

Efficiency

To get maximum use of space

Usually there are several equally good solutions for arranging the many functions that go into a school building. Make sure the architect explores every possibility in searching for the plan with the maximum percentage of educationally useful space. Don't haggle over varying interpretations of what constitutes such space; merely keep in mind that two different floor plans containing identical instructional, administrative and service elements can easily differ by 10 per cent in their gross areas and, therefore, their efficiency. Make sure you are buying the maximum instructional space for your dollar.

Serviceability

To select materials on basis of overall cost

As used here, serviceability refers to the physical maintenance characteristics of a school building. In reaching decisions about building materials and mechanical systems, remember that some of the lowest initial cost materials become high cost materials over the life of a building. Do not cheapen the building "fabric" too much; often it is less painful to spend a little more in constructing a building than to *annually* raise the money needed to keep it from falling apart. Maintenance costs continue to rise each year, whereas initial construction cost is paid but once. It pays to select materials on the basis of their overall cost.

Economy

To balance needs with ability to pay

For maximum construction economy of the building, make certain the architect has placed it economically on the site and has made the maximum use of standard building materials and repetitive parts. Remember that the most costly part of any building is the exterior wall; keeping it at a minimum will invariably reduce the cost of both the architectural and the mechanical work. In cold climates, buildings with a minimum of exterior wall cost less to heat. As has been said of school construction, "true economy is a complex relationship between original cost, educational utility, efficiency, maintenance and operation expense." No school has ever been built that was not a compromise between all these conflicting factors. Each community must determine its own definition of "economy"; it must balance its needs with its ability to pay. When these needs are thoroughly understood, most communities find a way to pay the cost.

Beauty

To design a beautiful building

Only a beautiful school will remain a source of community pride through future generations. There is a popular misconception that a beautiful school is a costly school, that beauty is one feature which can be dispensed with when construction dollars are scarce. This myth obscures the fact that beauty is as important in a school building as well equipped classrooms and proper physical comfort. First we must recognize that good teachers and a sound educational program are more important than a beautiful building. But then we should admit that the very nature of education is stimulation, that a beautiful school can make education easier for both pupils and teachers. The architect who stays within a given budget should not be criticized for designing a beautiful school. Certainly one indirect purpose of such a building is to develop a sense of beauty in the minds and hearts of those who use it.

Compatibility

To build the school to fit the community

A school building should be designed to fit into the existing visual framework of the neighborhood and the community as a whole. This does not mean its architectural style must conform to the prevailing style in the area; it does mean the architect must find an architectural expression for the building that is compatible with the existing physical environment. The new building should "belong." When planning an addition to an existing building, don't repeat the mistakes of an earlier architect. Regardless of the architecture of the existing building, a competent architect can design a modern addition that will harmonize with it. An exact duplicate of an older building will never quite match it in appearance, whereas an honestly and imaginatively designed addition can materially enhance the character of the older building. The truth of this principle can be seen in much of the great architecture of the past. ■

Advising the board on specifying materials—

Eugene Used a Contractors' Advisory Committee

MONTANA H. RICKARDS
and CLARENCE HINES

Beset by what seemed more than the usual amount of criticism of schools built under its direction between 1948 and 1955, the Eugene, Ore., school board decided to turn to an advisory committee of local contractors for help when it had additional schools to plan. A new high school and a new junior high school, the combined cost of which was expected to exceed two million dollars, were the immediate occasion for the board's seeking help after a lay advisory committee had secured the passage of a bond issue to finance the new schools.

The committee sat with the board when the architects presented a basic design plan for the buildings and when the choice of materials was to be made.

Although the criticism of the school buildings constructed during the period when the Eugene district was experiencing its most rapid growth were those commonly made by irritated taxpayers throughout the length and breadth of the land, the Eugene board desired, if possible, to reduce it to a minimum. No one expected to eliminate criticism entirely, but it was agreed that better understanding would result and money might be saved through a contractors' advisory committee.

Buildings constructed to accommodate an increase in school enrollment from 4500 to 11,500 in 10 years were subjected to three main criticisms. There was, first of all, criticism of their cost. People in 1950 were still thinking in terms of the prewar cost of schools and other buildings. The school board thought that contractors ought to be more conversant with actual construction than any other group. The board believed contractors would know how to keep costs down if this could be done. A second criticism was that

Mrs. Rickards, formerly publicity director for the Eugene, Ore., schools, is now with the Beaverton, Ore., Schools and **Dr. Hines,** formerly superintendent in Eugene, is now Professor of Education at the University of Oregon in Eugene.

the buildings were costly because of their design. Associated with this was the charge that the architects were specifying expensive materials and unnecessary fittings to run up the cost of the buildings. The board believed that if this were true, and there was little evidence of it to those experienced in building, contractors would surely be able to detect it before bids were called. The third major criticism was that concerning materials. Some said that too expensive materials were being used. One man, for example, said "gold door knobs," while others said that the materials being used were not the best for the purpose and would not hold up under continued usage. It was the opinion of members of the board that contractors would certainly know about the best available materials for a given purpose, both from the standpoint of cost and permanency.

Board Open-Minded

The Eugene board's approach to the matter was an open-minded one. No member of the board would claim that all the buildings constructed had been perfect. The board wanted good schools, economically constructed, with low maintenance costs over the years. It felt that they must be designed to fit the educational program in Eugene as it presently existed and as it might be expected to develop in the future. This meant that some things would be included that might not have been considered necessary a generation ago.

The board knew, also, that it must have continued public understanding and support. This was essential for the growth period's end was not yet in sight and an operating budget must be voted each year. In order to secure the necessary understanding and support, the board realized that it must eliminate or nullify as much of the criticism of the building program as possible. It was the opinion of the board members that much good could be done, much of the criticism eliminated or nullified and probably money could be saved by taking advantage of the experience and community standing of reputable contractors.

Possible Difficulties Recognized

The action to appoint the contractors' committee was not taken hastily. The possible pitfalls were recognized and the board realized the importance of explaining to the committee that it was purely advisory and that the legal and moral responsibility for final decisions must rest with the board. "There is a possibility we are embarking on something that will cause more headaches than it's worth," one board member told the board. Experience proved that the values were far greater than any "headaches," due chiefly to the type of men chosen for the committee.

As the board finally decided to appoint the committee, it consisted of two general contractors, two electrical, two mechanical and one millwork. Each was a responsible citizen and taxpayer; some had substantial property holdings in the community and might be expected to be concerned about tax rates. More important, however, was that each was a recognized successful contractor in his particular line. His voice in the area of his specialty would be heard with authority by layman and associate alike. Each had good community standing and rated high with his fellow contractors. In addition to having an established place in the business life of the community, the contractors represented a variety of social and religious groups as well. This gave them a wide range of contacts.

Soon after the committee's appointment, letters inviting the members to serve were sent to the individual members. All accepted promptly and met with the board to discuss the work which the committee would do. Their position as advisers to the board on technical matters related to the buildings and the board's legal responsibility for all final decisions were discussed. It was agreed that the committee's work would center in two main areas. It would sit with the board when the architects presented a basic design plan for the buildings and when the choice of materials was to be made. The committee would review the final plans when they were substantially complete and make any recommendations it could for economies before the plans were put out for bids. It was decided, also, that when major decisions or those affecting the entire structure were to be made, all members of the committee would be present. On decisions affecting a specific part of the structure, such as the mechanical, the members of the committee who were specialists in the field would review the proposals and then discuss them with other members of the committee before bringing recommendations to the board. That this procedure was a sound one was amply demonstrated by the fact that at no time in the committee-board relationship or in the relationship of committee members with each other did any major friction develop.

Architects Co-operate

Much of the success of the committee's work, it was recognized in the beginning, would be dependent on acceptance of the committee by the architects and by the school staff concerned with the planning. Fortunately, both the architects for the high school and the junior high school were excellent "co-operators," high class professional men with open minds. There were some arguments at times but never any ill will or misunderstanding. The close relationship between the board and its professional staff insured that the staff would work wholeheartedly with the committee to secure the best possible buildings.

Regular meetings of the Eugene school board are held twice a month, on the second and fourth Mondays. There were few meetings over a period of six months when some item pertaining to the two buildings was not on the agenda. For major discussions, the contractors' advisory committee was present. In addition, the board held a number of special meetings devoted entirely to discussions with the architects, and the contractors concerned attended without fail. Frequent meetings were held during the day with contractors, architects, and members of the school staff present to consider specific matters prior to their presentation to the board. Relations were always amicable, and many of the most difficult problems were worked out in these small group meetings.

Responsibility Allocated

It was agreed in the beginning that design of the building was the responsibility of the architects and that the facilities required for the educational program would be determined by the staff. To the credit of the committee, it must be said that it never strayed out of bounds on either of these matters. Some suggestions were made for economies resulting in slightly modified design. These were accepted without debate by the architects. At no time did the contractors attempt to dictate to the board and staff what facilities the buildings should have.

Selection of Materials

The choice of materials, however, was a different matter. Located in a lumber producing area, Eugene is anxious to have as much of this native material used in its public buildings as possible. One of the first questions to be considered, after the decision was made to use frame con-

(Concluded on page 47)

ONE STANDS OUT

The science of seas, seeds or satellites could well be the all-consuming interest of this young scientist-to-be. The scientific design and manufacture of posture-correct seating and work desks are the prime concern of Virco Manufacturing Corporation. The Virco #200 Series classroom chair and the Virco #7961 single pupil desk have long been favorites with school administrators everywhere. Virco designs and manufactures school furniture for "kindergarten through college". For your free copy of our new full-color catalog with complete specifications, write to Virco Manufacturing Corporation, P.O. Box 44846, Station H, Los Angeles, Calif., or Virco, Conway, Ark.

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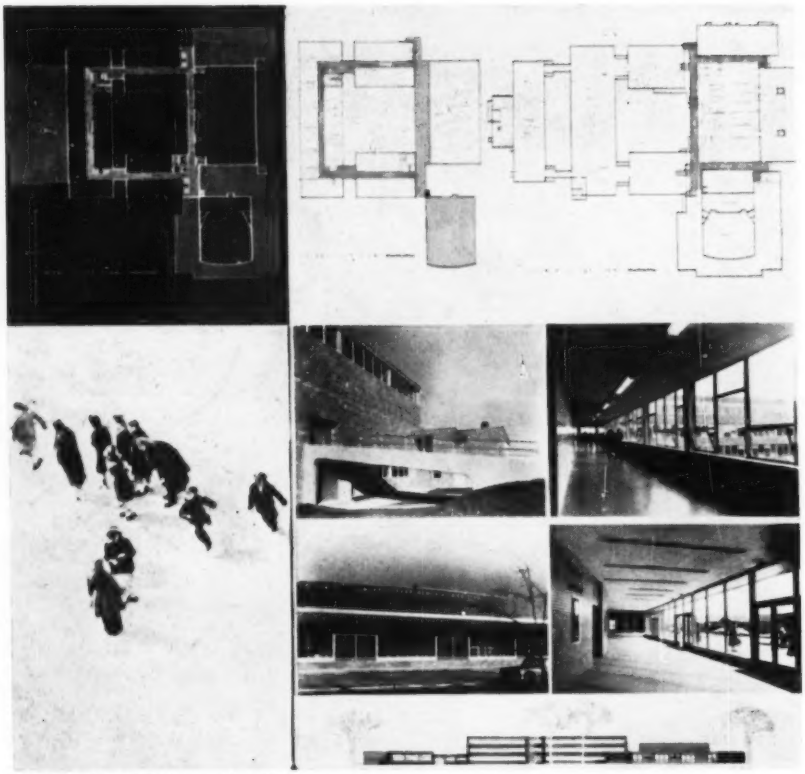


— Frederic P. Wiedersum Associates

The basic "why" and "how-to" of —

Educational Specifications

N. L. GEORGE

Assistant Superintendent,
Oklahoma City, Okla., Schools

Today in school building, the "new look" which bases education on the well-rounded growth in all phases of pupil development — physical, social, emotional, moral, and mental — necessitates a different school plant than was built yesteryear. The educator or the professional leader writes, or employs qualified people to write, educational specifications which will provide a school plant that will facilitate this "new look" in child development.

What Are Educational Specifications?

The determination of the needs of those using the completed facilities is the challenge to the educational leader. It takes the form of a systematic procedure for designing facilities for schools. Often the architect assumes more knowledge about education than the educational leader. The procedure is a fact-finding process of many people to analyze, describe, and interpret the program so it *can become the base for the* decisions of the architect. These program materials prepared for these purposes become the "educational specifications."

School administrators must carry the major responsibility in the preparation of the educational specifications. Regardless of the method used in preparation, whether it be a planning committee, staff committee, consultants, or whatsoever, the responsibility belongs to the chief administrator if the procedure is to achieve maximum results. The planning group (a co-operative group of educators, members of state department, students, and lay people) which has access to surveys and media such as slides, filmstrips, 16mm. film, opaque projectors, photographs, maps, graphs, etc., has a chance to do a more efficient job. Field trips provide firsthand experiences and make possible an evaluation of existing facilities. It is not the job of the architect to make educational surveys and write educational specifications. The architect should help, but it is the job of the educator.

Why Are Educational Specifications Needed?

One purpose of educational specifications is to explain what is needed in terms of space, atmosphere, and services in a specific situation in order that the architect may design school facilities to fit the pupils and the program. The architect has the job of converting the specifications to scale and mass in the form of a structure.

The planning for facilities increases in complexity as it is prepared for elementary, secondary, and college level specifications. At the best, educational specifications are tentative and related to particular situations. One set of educational specifications is needed for each school. Absolute standards and systems of planning cannot be developed for all schools because of the complex variables found in each particular situation.

Information which is needed for sound planning of educational specifications includes:

1. **The** philosophy and educational objectives of the school and community, including aesthetic values to be observed. In the elementary school, what type of instruction is to prevail (*a*) self-contained classroom, or (*b*) departmental instruction? In the high school, such practices as scheduling problems, study hall or no study hall, utilization

of classroom areas, curriculum organization, and student groupings, affect the design.

2. The interrelationship of educational activities between the elementary and secondary buildings, the site and playground, the community, other schools in the system, and other buildings on the site.

3. Specific local information needed.

a) Size of site in acres and dimensions.
   1) Planned development of site
      (a) Play areas and location of playground equipment
      (b) Walks, service drives for deliveries, and transportation
      (c) Outdoor paved areas
      (d) Parking areas — size
      (e) Site beautification
      (f) Garden plots
      (g) Community use of site
   2) Is money available for site development?

b) Size of building for attendance unit.
   1)

School	*Ultimate Size*	*Build Now*
Elementary	500	300
Junior High	750	550
Senior High	1000	750

   2) Is money available for needed building?

c) Kind and amount of equipment.
   1) Movable
      (a) Purchased in contract
      (b) Purchased separately
   2) Fixed building equipment
      (a) Purchased in contract
      (b) Purchased separately
   3) Is money available for purchase of equipment regardless of method pursued?

Factors in a Particular Project

A secondary school is never built. Changing economical and social patterns force the changes in the program of the secondary school. The space should be functional now and also be adaptable to the program of the future. The items which need attention in a high school building situation include: (1) area — number — names of areas — shape desired — square feet in each area; (2) relationship to other areas and orientation; (3) activities within this area; (4) traffic circulation — all kinds; (5) general considerations and future trends; (6) furniture and equipment; (7) storage — all kinds; (8) other special needs within the several areas; (9) color, decorating, and acoustics; (10) utilities; (11) audio-visual facilities; (12) development in conjunction with outdoor site area; and (13) the program for the community use of the plant.

Basic information for strong educational specifications. The total process has to be broken down into several parts, which are smaller steps, such as:

1. Review of school program planning.

2. Review of applicable parts of the plant survey report. Who makes surveys?

3. Determination of the number of teaching stations of each type.

4. Determination of other quantitative requirements, such as: (*a*) the number of lockers required; (*b*) seating capacities of gym, auditorium, and dining spaces; (*c*) the number of meals prepared in the kitchen; (*d*) the number of automobiles, bicycles, scooters to be accommodated on parking areas.

5. Determination of the qualitative design requirements for each type of room or space and its equipment.

6. The preparation of written educational specifications which are clear and understandable.

7. Educational specifications should be complete. Some room for oral interpretation and explanation should be provided. The educational specifications must be logically organized so that the architect can locate any specific information. A direct and vivid statement will facilitate the use of the document.

8. List the number and kinds of spaces needed now and the number and type needed in the future.

9. A statement concerning the spaces which are planned for one purpose now and can be adapted to another purpose in the future.

10. Preferences or requirements with respect to locations of different facilities or groups of facilities should be stated.

11. Limitations within which the architect must work should be stated.

Minute Information for Educational Specifications

Unless the educational leader supplies the minute information needed for the planning of a building, the architect is at a loss in knowing what is wanted. The large units in a building which need more or less detailing include:

1. *The administrative unit.* Provide a statement of the administrative organization of the system — location within the plant — enumeration of rooms — offices — workrooms — board rooms — conference rooms — reception area — approximate size of rooms — built-in storage — vault — entrance and exit area — communications system.

2. *Class or instruction rooms.* Numbers by grade or subject matter or activity — preference of location — size and shape — special features — rest rooms — work sink (amount and height) — pupil wardrobe — storage (amount, dimension, height) — tackboard — chalkboard and display area (amount and height) — lighting and lighting control necessary — service in each room — water (hot and cold) — electricity — location of outlets — conduit for open currents — TV and the like — acoustical treatment — clocks — storage — exits — full-length mirror — color — paint (flat) or varnish — balance — reflection factors: trim — 40–60 per cent reflection factor; desk and equipment — 30–50 per cent reflection factor; floor finish — 30–40 per cent reflection factor; chalkboards — 20–25 per cent reflection factor; ceiling — 85 per cent.

3. *Special areas and units* (size, location, and storage): Library (public use) — health room — special education rooms, spaces for gifted, physically handicapped therapy — music — multipurpose room — auditorium — etc.

4. Parking, school bus loading areas, delivery services, and plant maintenance.

Instructions to the Architect

A definite understanding should be had with the architect as to how much money is available for each feaure of the building program. The plan of expenditure should be detailed. The time required should also be understood.

The architect should also plan the structure so at to provide the greatest flexibility — that is, space that can be reassigned — provision should be made for the four elements of versatility: (1) fluidity of space — a free flow of space; (2) versatility of space — the multi-use of space; (3) convertibility of space — reuse of space for other teaching areas, make smaller or larger rooms with ease; and (4) expansibility — the extension of space at a minimum cost.

In some situations, the architect should plan for the contractibility of space.

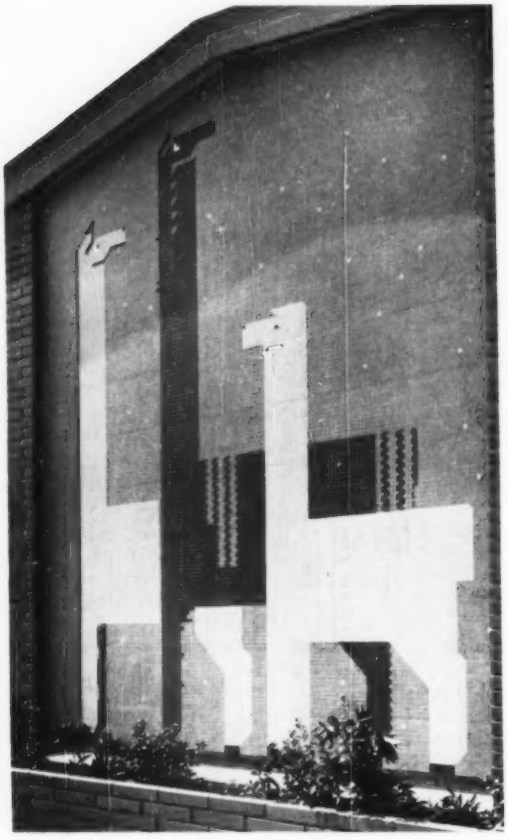
Educational specifications do not leave the needs of education to chance. They help the educator to envisage *what some day* will become a reality of concrete and steel, masonry, and wood. The educator spells out with equal care the function the building is to serve, and marks for special study the parts of the building where particular educational problems strongly influence the design. The architect takes these written documents, confident that he understands what the educators expect from the building he is to design and how it will function in all its complexity. Thus, they become the foundation for the development of plans and specifications on the defined project.

Test of Educational Specifications

How well do the educational specifications work in the hands of the architect?

Experience alone is the best test. If the architect takes the outline of educational specifications and puts them in a form of a layout which will solve the educational problems, the acid test has been accomplished. ■

South Street School, Redlands, California. Architects, C. Paul Ulmer, San Bernardino, California.



All photos courtesy of The Mosaic Tile Co., except those noted.

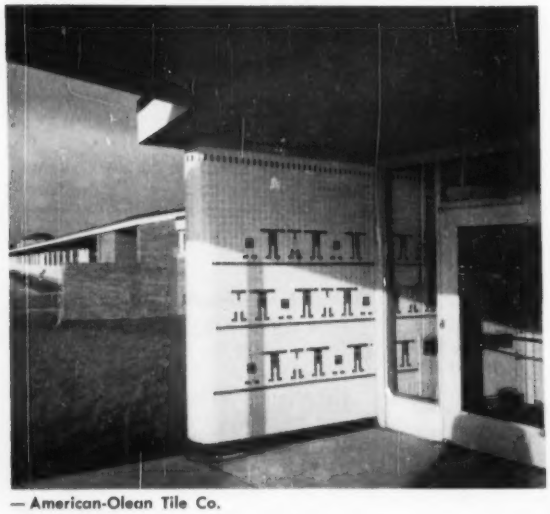
South Elementary School, Andover, Mass.

— American-Olean Tile Co.

Using Wall Tile in Schools

H. WAYNE CULVER
Public Relations Director
Buchart Associates, York, Pa.

Dogwood School, Park Forest, Illinois. Architects, Loebl, Schlossman and Bennett.



— American-Olean Tile Co.

When a school has been designed, it is the task of the architect to determine the finishes of the various wall surfaces. Because of the inherent beauty, flexibility, and low maintenance cost of tile, this material is always carefully considered at this point.

When selecting finishes, the architect uses a three-point yardstick — the structural values, the aesthetic quality, and the maintenance. With these three factors in mind, he then compares tile, paint, colored plaster, glass, vinyl coverings, and wood finishes. During the process of the comparison there are two major items that must be considered. These are the advantages (such as maintenance, the design element, color styling, and eye appeal or aesthetic quality) and the disadvantages (such as initial cost in relation to paint, etc., and the acoustical qualifications).

Supposing that tile has been selected after a careful study of the foregoing, the architect now must consider which type of tile to use. Naturally, there are a multitude of types and sizes. Some, however, seem to be more suited for specific areas than others. For example, the glazed ceramic tile with either a bright or mat finish is generally specified for walls such as corridors, in rest rooms, cafeterias, and lobby areas. A crystalline or ever-glaze type of tile is quite similar to the above, but has a leathery

Daniel Carter Beard Junior High School.

Hellertown Lower Saucon Joint High School, Hellertown, Pa.

— American-Olean Tile Co.

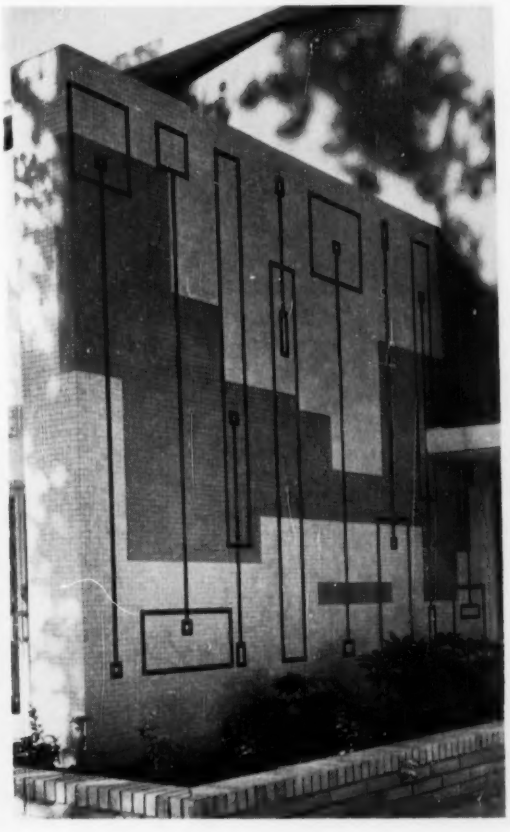
looking finish. This is frequently substituted for the glazed ceramic tile where an unusual texture is wanted.

Then there is the porcelain type tile that is used in patterns both for walls and floors. These are the small-sized tile which we see every day in swimming pool areas, rest rooms, cafeterias, and kitchens. There is a fourth type of tile — natural clay — but this is used primarily for floors where there is a nonslip requirement.

When the specific type of tile has been selected, the uses within that type are diversified and decorative.

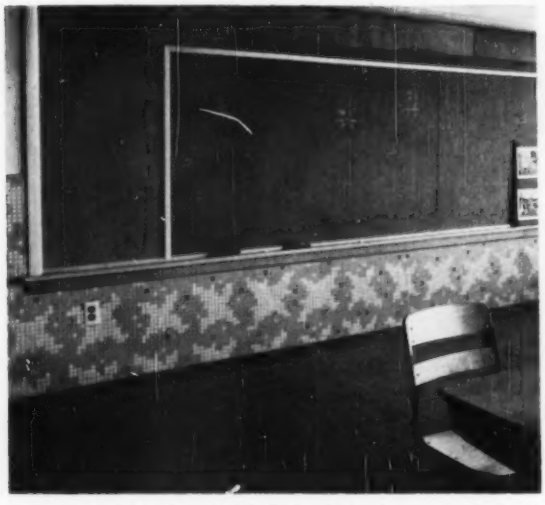
Primarily, tile is used either for protection (maintenance) or for decorative treatment (aesthetic values). Protective use is seen in areas exposed to water, grease, etc.; as wainscoting around chalkboard areas and on serving surfaces such as at cafeteria windows. Decorative uses are to brighten interior corridor walls, provide a spot of color around drinking fountains and to provide directional traffic through designs on lobby walls. Special uses,

Bakersfield High School, Bakersfield, Calif. Architects, Alford & Thomas, Bakersfield, Calif.



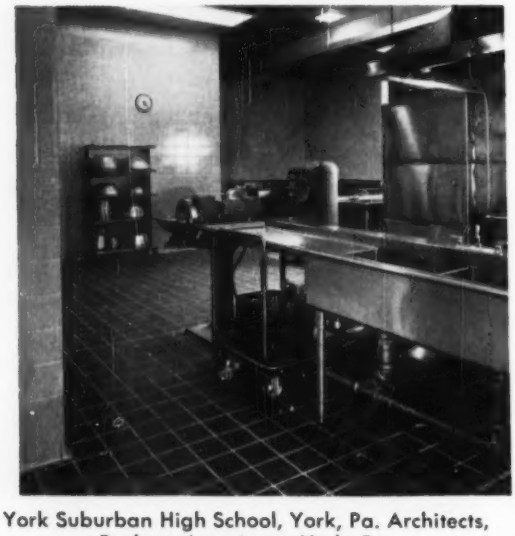
York Suburban High School, York, Pa. Architects, Buchart Associates, York, Pa.

St. Patrick School, Youngstown, Ohio. Architects, Frank F. Smith, Jr.



University of Michigan, Ann Arbor, Mich.

York Suburban High School, York, Pa. Architects, Buchart Associates, York, Pa.



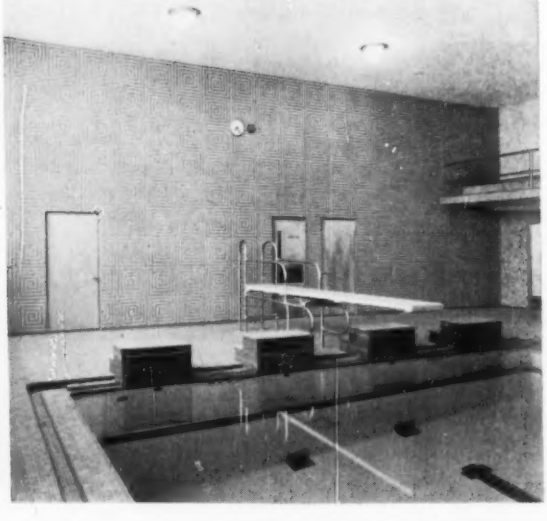
too, are found for tile in reproducing the school's seal, for example, or in preparing tile murals depicting historic events.

Still another use of tile is in the creation of ceramic curtain walls for exterior usage. These give an added touch of color to the exterior of the building and are beautiful as well as practical.

As to the future of tile as a wall finish material for schools — any new materials will be basically the same as the existing types with the exception of more decorative colors and new finishes.

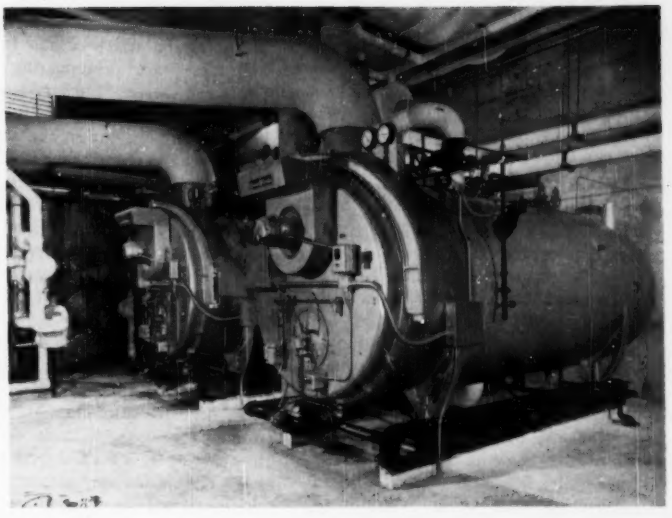
Tile manufacturers have been co-operative in supplying information and actual samples of the newest lines of tile to architects. Colors and designs for tile areas which are submitted by these manufacturers are carefully considered. Very often they are accepted and specified in accordance with the recommendations of the manufacturer. ■

York Suburban High School, York, Pa. Architects, Buchart Associates, York, Pa.



two important areas of mechanical equipment providing for thermal environment are considered for school boards on the following pages... (1) packaged boilers and (2) control systems—

— Cleaver-Brooks



What School Boards Should Know About Packaged Boilers

H. F. HOLTZ
Cleaver-Brooks Company,
Milwaukee, Wis.

While school boards are not normally required to know all the technical aspects of the elaborate equipment and machinery serving their schools, it is fundamental that they possess at least a general knowledge of what this equipment can realistically be expected to achieve.

This is particularly true in the case of boiler equipment — a durable goods investment with an average life of 25 years. During this life span, the boiler equipment will be a major factor in the cost of heating. Knowing how to select the right size and right type boiler for a particular application is vital for school boards.

Perhaps the best way to begin is with an explanation of what exactly a true packaged boiler is.

Normally, a packaged boiler consists of a boiler shell, burner controls, draft fan, draft controls, and other components brought together into a fully factory-assembled, fire-tested unit. Components are selected to work together for maximum safety, highest efficiency, and dependable operation.

Every model is thoroughly pilot tested and field proved as a unit before it is released and is full-performance tested in the factory before shipment to the recipient.

The boiler is pre-engineered and complete — ready for quick installation and connection to service lines. A built-in forced draft system provides all air for combustion while Underwriters' Laboratories approves the complete package, not just the burner. In essence then, a single manufacturer backs the entire package.

After the school board recognizes the basic difference between the packaged boiler and the built-up boiler, the next step is to study costs.

It is always wise to make a complete cost comparison. Frequently a quoted price will not agree with on-the-job assembling costs. Some features may be included in one cost and not in another.

Initial vs. Operating Costs

It should be remembered that initial cost is only a fraction of total cost of operation. Fuel costs are a large part of operating costs. The difference in fuel costs between an inherently efficient boiler and one low in efficiency can swallow up differences in original costs in a relatively short time. For that reason, school boards should take advantage of fuel savings made possible through efficient operation.

Efficiency — the ability of the boiler to extract heat from fuel — is defined as the ratio of the output to the input. By output we mean the usable heat generated. By input we mean the total potential heat contained in the fuel the boiler burns. A guarantee of 80 per cent fuel-to-steam efficiency means that 80 per cent of the btu's put into the burner in the form of fuel must leave the boiler contained in the steam or hot water.

When determining boiler efficiency, it is usually a good idea to find out from the manufacturer what the guaranteed fuel-to-steam efficiency for the boiler is under all operating conditions. Some

will claim a boiler efficiency of 80 per cent. That claim may not be proved under all conditions of fire. Guaranteed efficiency should cover the full range of operating loads from 30 per cent to 100 per cent of boiler rating.

Let's see how efficiency can effect the school board's budget. Say, for example, there are two boilers in a school in Toledo, Ohio. This building has a heat loss of 3,000,000 btu/hr. Degree days in Toledo equal 6394. Boilers are 100 horsepower units burning No. 5 oil (150,000 btu/gal). Outside design temperature for Toledo is — 10F; inside design temperature is 70F.

Boiler A: Annual fuel consumption at 80 per cent boiler efficiency equals 60,360 gal.

Boiler B: Annual fuel consumption at 70 per cent boiler efficiency equals 68,910 gal.

Savings in fuel at 11 cents per gallon for No. 5 oil, boiler A over boiler B equals 8550 x 11 cents equals $945.50 a year. If boiler life is assumed to be 25 years, lifetime fuel savings amount to $22,512.50.

This saving of $22,512.50 on fuel costs indicates how operating efficiency more than offsets initial costs — a factor school boards should always consider.

Fuel-to-steam efficiency is a function of the burner and the boiler. An efficient burner will burn fuel completely without large amounts of excess air. An efficient boiler will extract as much heat as possible from the products of combustion. A high CO_2 reading in the exhaust gases indicates good burner design and operation. Low exhaust gas temperature also indicates good boiler design and efficient operation.

In considering a fuel oil, school boards will want to take into account the comparative costs of storage tanks, oil pumps, preheat equipment and piping to and from the boiler house.

Light oil is a type of fuel commonly used for house heating. Costs for light oil are higher than for heavier oils and gas. Heavy oil is a residual fuel usually referred to a No. 5 or 6 fuel oil, Bunker C, or PS 300 and PS 400. It requires preheat equipment to pump and burn properly, plus accessories for combustion and maintenance. Its advantages are lower cost and higher heat control.

Coal in today's modern boiler plant is being replaced by oil and gas. Coal is bulky and requires considerable storage space. Labor for handling coal, and removal and high maintenance are in opposition to its low cost advantage. Smoke and soot must also be controlled in many areas which have passed ordinances on air pollution.

Chimneys and Headroom

Still another area which should merit major study by the school board administrator is ways he can save on construction costs through utilization of packaged boilers.

Back in the 20's and 30's it was normal to see a sky-reaching stack providing draft for a heating plant. But today these stacks — costly to build and maintain — are disappearing from the American scene. Factory-tested packaged boilers using forced draft are eliminating the need for smoke stacks.

The compact package boiler easily solves low headroom problems. Figures show that a 150 horsepower boiler with an output of 5,020,000 btu/hr stands only 89 inches tall. A conventional firebox and boiler with a gross output of 4,500,000 btu/hr measures 115 inches high. The difference — a 25 per cent saving in headroom. Additional savings accrue by reducing costs of deep excavations required for conventional boilers. This, in turn, minimizes water seepage problems — or the task of blasting through layers of solid bed rock.

We have a number of cases on record where original plans called for cuts deep into the water table. By using compact packaged boilers, height of the boiler room was reduced and no penetrations of the water table — and water entry into the boiler room — were involved.

Perhaps equally important is the fact that with packaged boilers the boiler room need not be hidden or closed from visitors. It can be a modern, efficient, and clean base of operations — a show room. High operating efficiency under all loads and simple, automatic firing makes it easy to maintain high standards of cleanliness in the boiler room. School boards who demand exacting performance coupled with modern, functional appearance can achieve it with packaged boilers.

Selecting the Right Fuel

Efficiency of a boiler in a particular application can be affected in an important way through proper — and conversely — improper fuel selection.

Choice of gas, light or heavy oil, or coal will be based on total costs, cleanliness, and ease of operation. To determine the cost of operation, school boards should consider these aspects: (1) fuel; (2) fuel storage facilities; (3) maintenance of fuel burning and fuel handling equipment; and (4) labor to operate and handle the fuel burning equipment.

Gas and oil are clean burning, convenient, and simple to store. Moreover, oil and gas lend themselves to fully automatic firing. As a consequence, they have risen steadily in popularity.

Gas is very clean burning and burner equipment is simple to design and easy to maintain. Usually initial purchase price of the boiler is less than other types. Gas rates are based on availability. Where gas utilities restrict use of gas in extremely cold weather, oil standby can be an excellent investment.

Boiler Design Standards

In covering the complete cost picture, we would be amiss if some discussion of current design standards were not included. This is important because boiler design affects both efficiency and overall boiler performance. Four primary design standards merit special mention!

1. *Four-Pass Gas Travel.* During the days of the coal-fired boiler, two-pass design was standard. It was required because the boiler operated with natural draft and the boiler was designed to keep gas velocity and draft losses at a minimum so coal could burn properly. With the advent of the packaged oil and gas fired boiler using forced draft, pressure drops were a less critical factor in the design and the number of passes were increased for better efficiency.

Four passes of gas travel are the greatest number offered today. These boilers maintain a continuously high flue gas velocity essential to high heat transfer by reducing the number of tubes in each successive pass. As hot gases travel through the first, second, third, and fourth passes, they transfer heat to the boiler water and then cool and occupy less volume. The cross section of gas flow area (number of tubes) is reduced proportionately to maintain high gas velocity in all four passes.

High gas velocities through the four passes increase heat transfer by improving the gas film coefficient. Every square foot of tube surface becomes effective in transferring heat to boiler water. The ultimate result is high overall efficiency with low temperature exhaust gases.

2. *Five Square Feet of Heating Surface per Boiler Horsepower.* Adequate heating surface is necessary to transmit heat from combustion gases to boiler water. This heating surface is made up of boiler tubes, through which gases travel, and tube sheets.

Five square feet of heating surface per boiler horsepower is the greatest amount of heating surface offered in any packaged boiler. Five square feet of heating surface per boiler horsepower results in long boiler life and low maintenance.

3. *Forced Draft.* One of the best ways to provide air for combustion is forced draft construction. The forced draft fan moves cool boiler room air — air of constant temperature and density. It provides air at proper pressure in proper quantity, conditions necessary for high combustion efficiency and proper air-fuel ratios.

Another way of providing air is through an induced draft fan. Since this fan is a constant speed fan and volume of air varies with temperatures, the fan

moves excess amounts of air on start up when combustion gases are relatively cool.

4. *Updraft Construction.* Updraft construction means low furnace design. The furnace, containing the hottest combustion gases, lies deep within the boiler water. There is a generous safety margin between furnace and boiler water. When the furnace is well below water level, foaming action of steam decreases and drier steam is produced.

While there are other design features to consider, these four recent developments are regarded as most significant.

Other features which school boards should look for when selecting his packaged boiler include: (1) integrally-built burners for combustion efficiency; (2) complete mixing of air with fuel plus high turbulence for good gas burner operation; (3) combination oil and gas fired burner which permits users to switch from one fuel to the other; (4) hinged doors for simplified cleaning and lower maintenance; and (5) quiet operation through vibrationless impeller, muffled air drawn into front head, and progressive firing from low to high flame.

6. *Nonsettling, noncorrosive moisture and heat resistant insulation such as glass fiber.*

In addition, school boards should check to see that the manufacturer completely tests the boiler prior to shipment and that a qualified service expert will be on hand to start the boiler.

Protected Investment

After going through these steps to select his packaged boiler, school boards will want some assurance that his investment is being fully protected. They will want to know that their boiler has flame failure protection and safeguards against low water and excess pressure.

These safeguards are achieved through several techniques. For example, there are pump controls and low water cutoffs which start and stop boiler feed pumps and which maintain boiler water at proper operating level. Electronic flame scanners provide positive burner shut down on flame failure.

Combustion control systems program operating sequence of blower, burner motor, ignition systems, fuel valves and modulating motor. This assures firing rate matched to the load from 30 per cent to 100 per cent of fuel rating. And preheater systems are available with steam-oil and electric-oil preheaters and safety interlocks and temperature sensitive controls to maintain flow of heated oil in heavy oil models.

Following the procedures outlined here, school boards will be in a better position to participate more fully when it comes to selecting the right boiler for their schools. ■

What School Boards Should Know About Temperature Control Systems

C. A. GUSTAFSON
and G. E. FICKETT

What kind of heating control system should our new school building have? How much should we pay for it? What about the various kinds of controls we've heard about — day-night, summer-winter, outdoor-indoor? Should we have zone or room controls? Do we need a central control panel?

These are some of the questions school boards and administrators must answer when they consider the heating and ventilating system of a proposed new building. If air conditioning is planned, additional control questions must be answered.

Admittedly, controls are not the biggest item in the construction budget. Their cost generally runs about two per cent of the total. For a $750,000 school building, controls can be expected to cost around $14,000.

Yet, consider how important controls are:

With improper temperature controls, even the best-engineered heating and air conditioning system can't function properly. Controls are the brain and nerves of the system. They sense thermal changes and relay messages to the muscles of the system — the boiler or furnace, valves, dampers, and other equipment. If the controls are inadequate, the system can't work well or won't work at all.

And if the heating, ventilating, and air conditioning system doesn't do the job it's supposed to, then the expensive new building will fail to provide the thermal conditions needed for efficient learning. In addition, the system will be a constant maintenance headache and a cause of high fuel bills.

Recommended practice calls for leaving the details of the temperature control system to the architects and engineers designing the building. However, architects and engineers cannot work in a vacuum. The school board must make clear its policies, plans, and requirements in advance. If this is done, the bricks, cement, piping, wiring, and other structural components will be an expression of policy, not a strait jacket for it.

In its relations with the architects and engineers, the school board must often walk a narrow line. On the one hand, it cannot presume to dictate to technical people who are experts in building construction. On the other hand, it cannot afford to accept all technical proposals without making some evaluation of them along policy lines.

This is why technical societies have gone deeply into all aspects of construction, and it is also why many states have developed construction and practice recommendations to guide local boards. Reputable architects and engineers are familiar with recommendations from both technical societies and governmental agencies.

Mr. Gustafson is manager of the technical service department and Mr. Fickett is manager of the Contract Division for the Powers Regulator Company, Skokie, Ill.

What kind of heating control system should our new school have?

How much should be paid for it?

What about the various kinds of controls we've heard about?

Should we have zone or room controls?

Do we need a central control panel?

The following points are based on these recommendations as they affect temperature control systems. These recommendations parallel to the experience of the Powers Regulator Company in working with hundreds of school boards for almost 70 years. They can help school boards evaluate temperature control systems intelligently.

Four Criteria

The four criteria of any successful temperature control installation are: (1) comfort; (2) flexibility; (3) simplicity; and (4) economy.

Each criterion is dependent on the others for fulfillment, and the optimum system is one which balances all four. In so far as rules can be laid down to achieve this balance, they are as follows:

1. Provide individual room control. This is the only way to achieve individual room comfort through control of ventilation, heating, and, where appropriate, cooling. Trying to economize, for example, by making one thermostat serve two rooms is unsatisfactory. Factors of solar effect, glass area, body heat, and activity generally vary too greatly from room to room for anything but individual room control.

2. Provide control flexibility to match the intended uses of the school building. Here is where the board's policies and plans must be clearly stated and understood.

For example, School Building A is intended for day classes on weekdays only. During the night and on weekends, it will be unoccupied. An adequate control system for this building would provide a comfortable heat level during the day, subject to individual room control, and a lower heat level at night and on week ends.

The problem for School Building B is different. This school will be used for night classes as well as day instruction. However, all of the rooms to be used at night are in one wing of the building. For this building, zoning is indicated.

Zoning will permit the entire building to be kept at a comfortable temperature during the day, subject to individual room control. At night, the heat in the unoccupied zone is turned down, while the occupied zone is maintained at day levels.

Still a different problem is presented by School Building C. This building is also used at night, but here scattered rooms throughout the building are involved, as well as the assembly hall and gymnasium.

There are two ways to handle this problem. One way is to group the night-occupied rooms, even though scattered, into zones. The heat for these zones can be turned up by centrally-located thermostats and valves, while the unoccupied zones receive less heat.

Where the piping required by this method is too expensive, the alternative method is to install day-night thermostats in each room. At night, these thermostats are automatically reset to a lower temperature. Each thermostat, however, can be manually turned to a higher setting at night without affecting the others.

Automatic vs. Manual Controls

3. Do not install automatic temperature control devices to provide operations required only at infrequent intervals and which can be safely done manually by competent personnel. This point is related to the uses of the building, especially where the distinction between day and night use is not sharp.

For example, a building may be intended primarily for day use only, but night use two or three times a year is expected. Is it desirable to provide zoning or day-night thermostats for these occasional uses?

Probably not. It might be less expensive to turn up the heat manually in the entire building on these few nights than to install a more elaborate control system.

4. Do not install controls where the cost outweighs the benefits. It is true that the more controls there are, the more responsive the system will be. But as the number of controls increases, so does the cost. The common-sense approach is to limit controls to the number needed to do the job, and no more.

5. Central control panels should be considered in terms of first cost versus inconvenience to operating personnel. Central panels enable the supervisor to measure space temperatures and make adjustments from a single point. Ease of checking and maintenance are the primary benefits.

Generally, the larger the building, the greater the need for a central panel. A one-story school building with seven or eight classrooms probably does not require such a panel. The custodian is never too far from any of the rooms. He can check the thermostat in each easily.

But in larger buildings with more area and more floors to cover, a central panel can be a major time saver. The school board should make its decision in the light of what benefits are expected from the panel.

Provision for Expansion

6. Provision should be made for expansion of the building and its services. This is especially pertinent where future air conditioning is a possibility. It may be more practical to increase the original building budget to provide for future air conditioning when the building is first going up. If postponed until air conditioning becomes a reality for the building, the costs may then be greatly increased due to required structural alterations.

If these recommendations are to be applied effectively, they should be discussed with the architects and engineers before plans are prepared. By no means are these recommendations the only factors that should be considered. Local conditions will dictate many other important considerations.

Considering the recommendations in advance is the best insurance against costly changes of plans once construction has started. It is also the best guarantee that new school buildings now going up will provide the right thermal environment pupils need to learn their lessons well. ■

Hints on how to purchase more appropriate kitchen equipment for a better lunch program—

We're Wasting Money on Kitchen Equipment!

THOMAS J. FARLEY
Supervisor, School Lunch Programs,
Milwaukee, Wis., Schools

Kitchen equipment for a school lunch program is quite different from that used in commercial restaurants. Choosing what is best suited for serving a large number of persons one standard meal is a problem altogether dissimilar from that encountered in preparing an à la carte selection, three meals a day for a public restaurant catering to whims of a fluctuating clientele.

When one considers that the school lunch program serves one set meal per day to a large number in a short time, it is difficult to understand why so many new schools are built with kitchens and serving lines geared to restaurant service.

First of all, it is well to remember when building or remodeling that it is a rare architect who has any knowledge of kitchen equipment; generally he contracts for the work to be done by a restaurant supplier. The restaurant or hotel supplier in turn has a draftsman who has had years of experience planning kitchens for hotels, hospitals, taverns, cafeterias, drive-ins, cocktail bars, sandwich shops, and drug stores, but he has done no or little work with schools. Even worse is the restaurant designer who has many schools to his credit, but all his school kitchens and serving lines are merely commercial cafeteria lines which are totally unsuited to the needs of the school lunch program. He has become an "expert" on the basis of the volume of his output.

Generally speaking, the equipment needed in the school lunch program is less expensive than restaurant pieces but has four to ten times the capacity.

School lunch equipment must cook and serve large volumes of good food with a minimum of labor to turn out 75-cent noon meals for about 30 cents. The abundance of labor used in an à la carte kitchen would be prohibitive in a school operation, yet kitchen appliance firms keep right on installing the wrong equipment because they have never stopped to analyze the differences in the two operations. The persons installing inadequate school kitchens are neither dishonest nor stupid, they are simply delinquent in getting information or reluctant to attempt anything different from what their commercial experience has shown them to be successful in their other fields of work.

Generally speaking, the most damming criticism of school kitchen jobs, aside from the fact that they have wrong equipment, is that they seldom show any opportunity for future growth. It is not at all unusual to find in a multi-million-dollar suburban high school kitchen equipment that is adequate for only 200 students out of a beginning pupil population of 1000. There is no space to add equipment. Expensive remodeling during the first year is often required. What will be done as the enrollment increases during the next 50 years that school is in existence.

Let's look at school lunch program equipment and take note of specific items about which school boards and administrators should be more informed when organizing a school lunch program.

Serving Line — No "Frills" Needed

This is probably the most misunderstood section of the lunchroom. Since it plays an important role between the production and consumption of food, it is surprising that so little attention has been paid to the actual mechanics of getting the food to the pupils. We have explained how school food service differs from a commercial cafeteria, but just look at the typical school serving line, complete with railings, sneeze guards, steam table, bun warmers, water fountains, salad display racks, ice pits, ice cream freezer, self-leveling milk dispensers, sliding doors, glass shelves, and all the other inappropriate equipment which makes it next to impossible to serve one standard meal over the counter.

These steam table serving lines are 30-year-old, time-killing, monstrosities thinly disguised in stainless steel to give a semblance of modernity to a design which is basically inadequate and non-functional. School lunch does not need the standard cafeteria line because that is a stop-and-shop proposition deliberately constructed to slow people down, to tempt customers to buy and purchase extras. We produce, each day, a com-

plete balanced meal of meat, a hot vegetable, cold salad, baked dessert, bread, and milk. Our job is to serve this meal rapidly to the student.

A steam table cafeteria line serves at the rate of four to seven per minute because of its inherent slowness. School lunch can serve 15 per minute if we get rid of the needless junk hung on our serving lines. We can do this by having the students carry their own trays and having the serving personnel place the food directly onto the tray. "Impossible," you say, but not if the serving line is narrow, as it can be if the serving pans are set lengthwise with the counter instead of vertically as is the custom of the past. Stated briefly, a serving line only 14 inches across (instead of 32 inches in depth) permits the food servers to place the food directly on the trays which the students push along the tray slide.

To serve so easily and directly requires, of course, that all that needless array of expensive stainless steel and plate glass display racks be removed. These glass guards require that trays be handed by the servers and be passed over the top, which is a time-consuming action.

Have you ever stopped to wonder why these glass guards are placed along the serving line? They are required in public cafeterias where foods are "displayed," oftentimes for several hours before a customer makes his choice. In our school lunch rooms, no food is "displayed," it goes directly from the pan in which it was cooked onto the tray held by the student.

The whole idea of a steam table in a school lunch is incongruous. If the food is served as fast as it should be to several hundred students, the pans will be empty before the food has a chance to cool. Far too much money and attention is devoted to "keeping food nice and hot." Too little attention is given to training personnel in the basic fundamental that the food should be cooked on a schedule which does not allow food to stand before serving. Bring hot food from the oven to the serving line and get it to the students' trays without delay. Additional ovens are far less expensive than a heated serving line.

Naturally, a commercial cafeteria needs a steam table because it has a three-hour lunch period for a couple hundred customers. Why are we tied to acceptance of these totally different needs?

If your school has split lunch periods and you feel there is a need to keep food hot, try suspending some infra-red lamps over the line; they are relatively inexpensive yet are very effective.

Another inappropriate piece which is cluttering up school serving lines, is the steam table serving line with a wooden plank along the inside. This is a sandwich board. It is a direct tip-off that the person who laid out the installation hadn't the foggiest notion of what the school lunch is all about because this piece of wood is used in an à la carte cafeteria where the customer orders a particular sandwich constructed to his order. Besides being useless for school lunch, this additional 10 inches along the line makes the counter so wide that it is impossible to reach across to serve food rapidly onto the trays.

Many of our newer and more expensive schools install a cute little gadget called by various names whose function is to hold a supply of milk cartons and dispense them by a spring-leveling platform so that the milk cartons are always brought up to table level. This refrigerated stainless steel cabinet cut into the serving line is excellent for commercial cafeterias which load milk into it at 6 a.m. for three meals spread over 15 hours, but it is ridiculous for a school lunch installation.

Why pay the expense of refrigerating part of your serving line when you already have a walk-in cooler where the milk is held until needed? There is an excellent stainless steel milk cart on the market for $25 which can be used to hold the milk in the cold room and which can also be wheeled into line and served as the milk dispenser at the end of the counter. One of these carts can easily hold 250 half-pints of milk. If you have a large program, you could have several carts loaded in your cooler room and roll each into the line as needed.

It isn't just a matter of cost, although we sell penny milk as contrasted to 10-cent milk in commercial cafeterias; there is the element of labor. The expensive spring-loaded refrigerated gadget must be hand loaded by the kitchen personnel. It generally has to be replenished right in the middle of the lunch period, too, so the line is held up. Not only that, but labor is needed daily to keep the unit clean because some paper cartons in a lot of 500 will leak. In my rounds as a supervisor of school lunch programs, I count it one of my more unnerving experiences to walk in and find one of the kitchen personnel standing on her head in this refrigerated box cut into the serving line, trying to wash the insides with ammonia. Tell me, administrator, how would you like that job? That is, of course, a silly irrelevant question, but it bring up one which is not ridiculous and whose importance is self evident: "How often do you think this daily cleaning job is done?"

What Kitchen Equipment Is Needed?

The most important item is the deck oven for it is in this that most food is prepared in quantity cookery. Deck ovens are of various sizes and shapes. Some are good, others bad, but basically deck ovens can add units vertically so that it is possible to expand in the same floor space as the student population grows.

In specifying this most important of all cooking equipment, remember two points:

1. All decks should be baking ovens, not roasting.
2. Interior dimensions should be sufficient to accommodate two standard bun pans per deck.

A large portion of the trouble in school lunch programs is traceable to the fact these two features were disregarded. Any food cooked in our program can be cooked in the smaller bake oven. Bake ovens give better control than roasting ovens. It is possible in the case of gas fuel to get four decks of bake ovens in one stack. It is very poor policy to arrange two bake ovens on top of a larger roasting oven because good baking just cannot be done in a roast oven. Conversely, bake ovens not only do a better job of baking, as is to be expected, but do a better job of roasting.

The feature of each deck having a capacity of two standard bun pans is of great importance because deck ovens of lesser width will give you only 50 per cent capacity if your kitchen is equipped with standard size utensils or it will force the purchase of odd-size pans for oven use. This is most unfortunate because the standard 18 by 26-in. pan is also useful as refrigerator shelving and fits into the wheeled bakery racks which are so useful all over the kitchen. A hodgepodge of various size pans presents not only an excessive investment, but an expensive storage problem because odd sizes do not nest and stack and require more shelving and more daily handling.

Deck ovens of large capacity are a paying proposition because with sufficient oven space, inexpensive baked desserts can be made from government flour, eggs, and milk instead of purchasing cookies and ice cream because "the ovens are all filled."

One school serving 500 children with five decks of ovens decided to borrow money to purchase an additional four-deck model. Their profit on bakery alone in the first year allowed this school to pay back its loan in eight months and show a substantial margin for the year.

A Small Range, No Stockpot

Get rid of all but two burners for rapid heating of small sauce pans. Avoid ovens under ranges because no cook can work well around her shoe tops. No one

of intelligence would try to cook any substantial amount of food on a range top because the job cannot be done well. It entails extremely uncomfortable labor, and often gives poor results. The big multi-gallon bubbling stockpot on a range top is a mark of low quality food and too many cooks. A vegetable will not be prepared well in these big cauldrons, as the whole mess has to be tended to avoid sticking and burning. Besides, how are you going to get it off the range when the food is cooked? The food has to be dumped into 12 by 20 cafeteria pans for serving anyway; so the food would have been better cooked in those pans in the first place. Cut stockpots off your list and save some money. You save money in labor every day by keeping the big pots out of the kitchen because they are difficult to clean and store.

Steam Oven Is a Must

Here's the item for cooking the vegetables. The cafeteria pans slide in and are done in much less time than in boiling water in the big pots. Food tastes better, looks better, and is nutritionally better than when the nutrients are leached away in water. Delicate foods such as broccoli and asparagus retain good appearance because the vegetables are cooked in the same 12 x 20 pan in which they are served.

Select a Low Model Steam Kettle

A steam kettle is a very useful piece of equipment if it is not used to run the program in the direction of soups. The school lunch is not a soup program. Steam kettle should be of 40 or 60 gallon size. In any case, the low models are better in the 60 size because few women in the lunch program can reach over the top to touch the bottom of a large standard kettle. Some communities overdo on kettle and range top cooking, and as a result the meals are often of a type which can be taken through a straw day in and day out.

Buy a model which has a 2½ or 3 in. draw-off valve because kettles with a small opening require extra labor when everything cooked in them has to be ladled out over the top in small sauce pans. It's sloppy too, and very time-consuming. The large draw off, on the other hand, can accommodate not only soup, but stew, chili, chop suey, etc.

Hints for Buying Appropriate Equipment

These hints on how to purchase more appropriate kitchen equipment are intended to help the board and their administrators, working with their school lunch directors, obtain the very best school lunch program possible from available dollars. ■

Twenty-four classrooms in a single-loaded corridor—

Littleton Euclid Junior High School

Littleton Euclid Junior High School in School District No. 6, Littleton, Colo., is designed to accommodate 900 students. At the present time the student enrollment is 945. Twenty-four classrooms located in the two story unit along the north side are unique because as they are located in a single-loaded corridor with an open space above the lockers between the hallway and the classroom, and an open passageway into individual classrooms with doors eliminated.

The cafeteria is equipped to accommodate the student body, and is located to take the best advantage of light and sunshine. The room itself is an expanded corridor with rollaway tables so that the area can be used for several purposes. The kitchen is one of the most modern, furnished with stainless steel equipment and has all of the facilities necessary to provide economic and wholesome food service.

The shops, arts and crafts, and home economics department are located around a general planning room.

The gymnasium area is equipped with roll-away bleachers and, with folding chairs, can be used as an auditorium to seat over 1000 persons. The ample locker and shower space for boys and girls, office space, equipment storage, and first aid rooms are conveniently and efficiently located. The northeast side of the gymnasium is in the form of a glass wall, which greatly enhances the lighting and beauty of the gymnasium. An auxiliary physical education space is also provided at one end for wrestling, tumbling, and similar sports. These can be engaged in without interfering with the use of the gymnasium court of the school.

The music department is housed in two large rooms across from the gymnasium in order to center the noisier part of the building away from the classrooms. The rooms are used by the vocal and instrumental departments and are acoustically treated. An office space separates the two areas.

The general office is conveniently located and provides for ample waiting room, office area, and semi-private offices for the administration and counselors. The library, clinic, and teachers' lounge is also located nearby.

The building site is on the west end of a 36-acre area purchased by the school district several years ago. The building is set on concrete caissons excavated to shale foundations and is constructed of steel and concrete with the construction members, both steel and concrete, exposed. Walls and areas which are subject to wear are constructed of durable clay tile products.

All rooms are equipped with unit ventilators, providing both warm air and fresh air, with general exhaust systems thruout the building to provide ample ventilation.

An attractive center court is to be completed in the very near future which will serve as an activity center. Mosaic squares which have been designed by students will be inserted later. The terazza benches were generously donated by the contractor. Attractive flowers and shrubs are also planned, which will enhance the beauty of the area.

Total cost for the finished building was $12.59 per square foot. There are 34 teacher stations, which cost $31,147 each. Cost per pupil was $1,178. ■

WORD FROM WASHINGTON

The Federal School Aide Impasse

ELAINE EXTON

Will the New Year bring enactment of a new federal school aid measure? Much depends on whether the second session of the 86th Congress will be able to resolve the fundamental issue of what form such aid should take.

Whether the Federal Government should give categorical grants in specified areas for a limited emergency period, or provide broad general support for education on a permanent basis to be applied by the states according to their own determinations of the most critical educational needs, or authorize a combination of aids of both types continues to be a pivotal question.

Despite determined maneuvering to overcome the impasse caused by these opposing points of view, there is as yet no clear sign that passage of either type of school aid can be achieved in 1960.

Contrasting Comments

At the Annual Meeting of the Council of Chief State School Officers (November 10–14, 1959, in Boston) a spirited exchange between Congressman John E. Fogarty (D., R. I., Chairman of the House Appropriations Subcommittee on the Departments of Labor and of Health, Education, and Welfare) and Finis Engleman, Executive Secretary of the American Association of School Administrators, highlighted the differing opinions on the merits of these approaches.

Praising the National Defense Education Act as an example of "categorical aid," Congressman Fogarty said there was nothing in it "that would justify unreasoning fear of federal control." Among other things he cited "the contribution it has made to the working partnership between federal and state education officials" and noted that "some education officials believe that the measure's greatest contribution may be the spreading of testing and counseling programs throughout every state."

Finis Engleman, on the other hand, called attention to the dilemma the National Defense Education Act poses for Chief State School Officers since in fulfilling their responsibilities under the Act they may make its emergency program successful and in doing so destroy the possibilities of getting a good, long-range education law enacted. He regreted that the Defense Education Act "results in encouraging boards of education and state departments of education to buy what Congress wants them to buy rather than what they need."

Contending that "our curriculum is in many respects being determined not by careful thought on the part of the American school educator, but by forces on the national level, such as the test-makers and the textbook makers," Dr. Engleman maintained that "the National Defense Education Act has given them armour and powder for their guns." "They are on the march," he warned, "and unwittingly, I fear, some state departments have picked up inspiration from them and are applying nonsensical testing devices through the state structure."

Congressman Fogarty replied that for some years the majority of Congressmen have been opposed to general aid to education and until more of the public is won over he doubted if much progress can be made in Congress on school aid legislation except through a categorical approach.

Status of Murray-Metcalf

The broad-purpose principles favored by the National Education Association are embodied in the Murray-Metcalf Bills (S. 2 and H.R. 22) which would authorize a federal expenditure estimated at $1.1 billion in the first year for school construction and teachers' salaries. The federal outlay would rise to $4.7 billion by the fourth year and then continue at this level for an indefinite period.

Flat grants would be allocated to the states on the basis of $25 for each school-age child (aged 5–17 inclusive) the first year, $50 the second, $75 the third, and $100 in the fourth year. Each state would be free to determine what proportion of its allotment would be used for teachers' salaries and/or construction.

The grants could be used for public tax-supported education only. No matching would be required, but a strong maintenance-of-effort formula is included which would become effective at the beginning of the fourth year. Under this provision a state's allotment would be reduced if its relative effort to support schools from state and local sources is less than the national average effort for all the states.

Of the three major types of pending school aid legislation — emergency school construction grants, debt service aid for school construction, and broad-scale federal support — the last-named (H.R. 22) gained an initial advantage by being first to begin the journey down the legislative course.

The revisions suggested by the House General Education Subcommittee chaired by Congressman Cleveland M. Bailey (D., W. Va.) to reduce opposition to the bill include limiting the duration of the Act to four years and reducing the allocations to the states to $25 annually per school-age child instead of having it mount to $100 per child by the fourth year.

These changes were agreed to by the full Committee on Education and Labor of the House which reported the measure favorably on May 14 by a vote of 18 to 10 cast largely along party lines, with two Democrats joining eight Republicans to vote in the negative (House Report No. 447, June 8, 1959).

If the states were to expend the money stipulated in H.R. 22, as modified, in the same proportion that they now are spending funds for the support of public schools, one third of the federal dollars would be used for school construction and two thirds for teachers' salaries. This would provide for building 37,000 classrooms in four years, according to National Education Association figures, leaving $3 billion for teachers' salaries over a 4-year period, or about $500 per teacher per year.

When Congress adjourned on September 15, the modified Metcalf Bill was still pending in the House Rules Committee.

Eisenhower Administration Bills

Meanwhile the Administration continued to push its own debt-retirement assistance plan to relieve the public schoolroom shortage as set forth in H.R. 4268 introduced by Representative Peter Frelinghuysen (R., N. J.) and S. 1016,

sponsored by Senator Thruston B. Morton (R., Ky.) with several others.

This stratagem would authorize a five-year program of assistance to needy school districts in meeting the debt service (i.e. annual installments of principal and interest) on bonds or other obligations issued to finance construction of urgently needed elementary and secondary school facilities. It would commit the Federal Government to advancing ½ of the annual debt service payments on such bonds. The states would be required to pay the other half of these advances or to make equivalent capital grants or loans.

Under the Administration's plan the maximum principal amount of bonded indebtedness which could be covered by Federal-State debt service commitments would be $600 million a year, or a total principal amount of $3 billion over the 5-year period. The ultimate federal cost of roughly 1½ billion would be "stretched out" over 20 to 30 years.

The federal funds would be distributed among the states on the basis of public school enrollment, income per child of school age, and the school financing efforts exerted by each state in relation to the national average expenditures for school purposes. To be eligible a detailed state plan would have to be submitted to and approved by the U. S. Commissioner of Education with provision for identifying needy school districts and determining what would constitute a "reasonable tax-effort" on their part.

Once the bonds had been retired, the local school district would be required to maintain its "reasonable tax-effort" for an additioinal 10 years and to apply any excess revenues as partial repayments of the advances made by the Federal and State Governments. The original Administration bills make no provision for needy school districts already at their legal debt limit and unable to issue more school bonds.

If enacted and fully used, the Administration's program for building classrooms, according to Secretary of Health, Education, and Welfare Arthur S. Flemming, could provide the nation with an additional 75,000 schoolrooms without entailing federal deficit spending or contributing to inflationary pressures.

At Congressional Hearings as well as press conferences, he has made plain that to be acceptable to this Administration a federal school aid program must observe the following principles:

1. Provide temporary, emergency assistance on a basis that will preclude any possibility of federal control.
2. Arrange for assumption by the states of a fair share of construction costs on a matching basis.
3. Assure recognition of relative financial need in the provision of federal assistance.
4. Give due regard for the nation's fiscal situation.

From the Administration's standpoint federal grants for teachers' salaries are out of the picture. Secretary Flemming has publicly stated that he would recommend a Presidential veto of the Murray-Metcalf legislation in the event it passes Congress.

Senate Bill 8

Taking cognizance of the legislative hurdles posed by the Administration's stand, and other obstacles, the action on the Senate side has largely been directed toward attaining a workable compromise.

On September 8 the full Senate Labor and Public Welfare Committee chose as their rallying point by a vote of 12 to 2 an emergency two-year school construction bill — S. 8 — which had been introduced earlier in the session by Senators Pat McNamara and Phillip Hart (both Democrats of Michigan). It is drafted along the lines of President Eisenhower's 1957 education measure.

As reported out by the Senate Committee, S. 8 would authorize $500 million in federal grants for school construction for each of two years. (President Eisenhower's 1957 proposal recommended $325 million a year for four years for this purpose).

When these federal grants are matched with state and local funds, a total of roughly $2 billion would become available to help reduce the classroom deficit, a sum large enough, according to Cimmittee estimates, to build between 50,000 and 70,000 classrooms, assuming maximum state and local matching.

Under the reported Senate bill the federal money would be allocated among the states on a 3 to 1 equalization formula based on school-age population, income per school-age child, and relative school financing efforts in the respective states.

Hailing this emergency short-term grant program for school construction as an "approach (that) gives the maximum results for the funds expended with minimum federal involvement and cost," the Senate Committee on Labor and Public Welfare states in its majority report on Senate bill 8 (Senate Report No. 1011, September 12, 1959) that "a substitute proposal to finance bonds for school construction with the Federal Government paying about one-half of the interest and principal on a long-term basis was considered and rejected by the Committee because:

1. It was costly due to excessive payments of interest.
2. It would involve the Federal Government in the local education scene for a lengthy period of time.
3. It set conditions calling for changes in state and local laws and methods of financing in the majority of states."

The Committee further asserts that "S. 8, as reported, represents the widest Senate concensus on federal assistance for schools" declaring that "efforts to provide a more extensive bill would have met substantial opposition — not the least of which would have been that of the executive departments."

Should S. 8 be adopted by the Senate and pass the House, President Eisenhower would be placed in the somewhat difficult position of having to decide whether to veto a measure that is substantially the same as the one he recommended in 1957.

Secretary of Health, Education, and Welfare Flemming has reported that the Administration's 1957 bill "would be in conflict with the current fiscal policy of the President." If compromise education legislation must be adopted, he hopes that Congress will move in the direction of the bill — S. 2637 — sponsored by Senators John Sherman Cooper (R., Ky.) and Joseph K. Javits (R., N. Y.) which follows, with modifications, the spreading out of Federal-State debt service payments over a 20-to-30 year period as featured in the 1959 Administration bill (S. 1016).

Cooper-Javits Position

S. 2637 contains two important provisions not present in the Administration's plan, however, a special provision for needy districts up against a debt limitation (matching grants for construction in the next two years, provided that the state move toward removing the debt limitations of the school district) and a special incentive for states devoting a higher proportion of their income to teacher's salaries (offering more favorable matching for the school construction program, up to $3 federal dollars for $2 state dollars).

Senators Cooper and Javits stress that their bill, which calls for federal payments of principal and interest on $500 million in construction bonds annually over a four-year period to be matched by the states, would provide for building approximately 100,000 schoolrooms in four years, twice as many classrooms as the Senate Committee's bill. This larger figure they contend would "more nearly meet the 140,000 classroom shortage admitted to exist in the nation."

They have said that they would offer S. 2637 "as an amendment in the nature of a substitute for S. 8" when Congress reconvenes in the belief that their proposal "has a far better chance of being adopted by the Congress and becoming law." ■

the AMERICAN SCHOOL BOARD JOURNAL

NEW YORK'S FAILURE

THE proposal to change the New York State constitution to permit New York City to borrow $500 million for schoolhouse construction in excess of the debt limit was defeated at the November 3 election by a decisive vote in the city and upstate. The bitter debate which began in the early spring, was led by Mayor Wagner, the board of education, and various citizens' groups interested in education, who favored the bond issue. It was opposed by City Comptroller Lawrence E. Gerosa and a number of civic groups who held that the funds now available are ample and will be increased as needed by the normal growth of the city real estate values.

Following the election, a board of education spokesman declared the 15 projected new building plans must be abandoned. Mayor Wagner, however, suggested that the city administration would be obliged to curtail not only additional schoolhouse construction but also the purchase of new subway cars, better street lighting, parks and playgrounds, housing, and urban redevelopment. Evidently the city administration was using the case for the schools to solve many of its growing financial problems in nonschool areas.

During the campaign and since the election no convincing answer has been given to Mr. Gerosa's claim that with proper management the normal funds which will be available will suffice for new school building needs. Whatever the correctness of this claim, it is evident that school needs cannot be mixed up with other municipal enterprises. In other cities, such as Toledo, St. Paul, Columbus, and smaller communities like Lubbock, Texas, the school bond issues carried by large majorities. The people knew exactly what the schools needed and for what building purposes the moneys would be spent.

SENSE OF PROPORTION NEEDED

OCCASIONALLY a newspaper editor, in commenting on a local situation, provides a useful, commonsense insight on a common failure of school boards. In a criticism of a suburban school committee, the editor of the Lawrence, Mass., *Independent*, implied that school boards should give "attention to detail" in proportion to the importance of the business in hand. The editor wrote:

"It was a little surprising, a couple of days back, to see the Andover school committee spending an hour in deliberation over whether or not to pay a teacher $100 to take on the responsibility of handling class and student organization accounts.

"We say this because back in January the same committee approved a total school budget of more than $1 million with hardly the arching of an eyebrow. One would think that, all things considered, the issue of expending a sum as large as the latter, would take more time to consider than paying out $100, but such was not the case.

"It is true that many school committees are noted for just this sort of thing, haggling over relative trifles, not being able to see the forest because of the trees, so to speak. But somehow, we assumed — perhaps because of the excellence of the town's school system — that Andover's school board was above falling into this pit. If nothing else, it proves the members are human and, hence, just as fallible as anyone.

"It was alleged during the deliberation that what really was at issue was 'the principle of the thing.' Well, could be. If so, we suggest to the suburban school committee that there's lots of 'principle' — and 'principal' — involved in a yearly school budget, and comparable careful attention to detail is as called for there as in the issue of paying out $100 for services rendered."

THEY'RE SERVANTS, NOT WHIPPING BOYS

UNDER the above healine, the editor of the Bergen, N. J., *Evening Record*, calls attention to two forms of failure of citizens in their treatment of public officials. It is hard to say which is worse, excessive criticism which makes officeholding a nightmare in many communities, or complete neglect in the selection of able candidates which results in mediocrity in office-holders and in local governmental service. The editor of the *Evening Record* writes:

With both Alvin L. Reufer and B. Franklin Reinauer II it is possible to agree despite a diversity in their observations on the variable pleasures of public service.

Mr. Reufer is president of the board of education in Ridgefield, N. J. The other night at a budget hearing he unburdened himself thus:

"I am sick and tired of such insinuations and carping questions. It is your budget and I don't care if you vote it down or not. If you want my resignation you can have it. This is the first time I have blown my top and I'm glad I've done it."

Mr. Reinauer, who is a commissioner in Ridgewood, addressed a Junior Camber of Commerce at Clarksburg, W. Va., and held out the delights of public office-holding and the penalties of not doing it:

"If there is mediocrity in politics it is your fault and mine because we have permitted mediocrity to develop by our refusal to participate and have let unqualified people assume places of importance by default."

Both gentlemen are right. The rewards of public officeholding are too often the abuse and innuendo that so disturbed Mr. Reufer. And the very abuse Mr. Reufer so vigorously resented is what helps to foster the mediocrity Mr. Reinauer so vigorously deplores.

There is a lesson in this, and the period of school board elections and budget hearings might be as good a time as any to repeat it. The men and women we choose for public office are doing a public service. It is our right — and duty — to observe and comment on their deeds and views. But they are not rogues, and it casts no credit on the lazy rest of us to imply that they may be.

SCHOOL LUNCHES

THE extent of the school lunch operation in the United States can be appreciated when it is said that 2200 million lunches were served during the 1958–59 school year. In the large cities, the schools enjoy the services of expert directors and nutritionists who control the preparation of menus and the mass purchases of meats, vegetables, and other foods; and individual schools have the advantages of trained cooks experienced in quantity cooking. No less important than these big business enterprises — and they are big business — are the jobs performed in the small village and rural schools where a country woman, helped perhaps by one or two other country women, buys foods available locally, plans the daily menus, cooks and serves the food, and manages the kitchen and the modest eating room.

School boards and their professional executives take the school lunch and its staffs more or less for granted and give it only casual attention so long as the program is handled to make both ends meet. As a writer in the School Lunch Journal observes, the school lunches have gone from the "rowboat to the rocket" stage.

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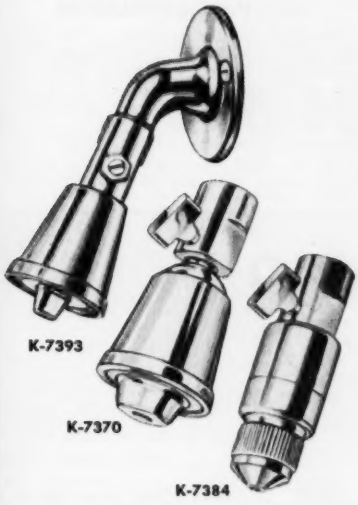

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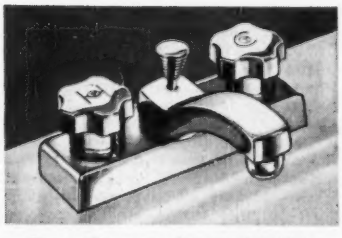

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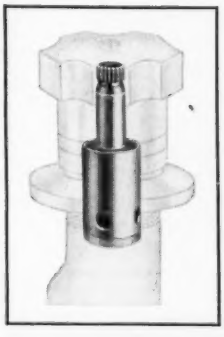

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Surveying the School Scene | news notes of special interest

TEACHER DISCHARGED FOR INSUBORDINATION

James R. Worley, chairman of the English Department at Fox Lane High School near Mount Kisco, N. Y., was discharged by the board of education of Central School District 2 in northern Westchester for his refusal to file written plans for classroom studies two weeks in advance.

In an eight-page decision, the school board noted that Mr. Worley had been ordered to file two-week plans for classes, as all the other 69 teachers were doing, but that he had repeatedly refused.

The board said that the order for preplanning was reasonable since such scheduling provided evidence that the teachers were actually thinking ahead; enabled administrators to check on class progress, and helped substitute teachers.

"Because the administration neither limited the form of this report," the board said, "nor used it in any way to censor the content of the classes, nor to dictate the details of instruction within the classroom, we hold that the directive was not an invasion of the teacher's freedom within his classroom."

The board asserted that "freedom to teach is not synonymous with the license to do altogether as one pleases, free of administrative direction or restraint. A teacher must recognize and respect the balance of administrative authority and teacher freedom."

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TWO YEARS OF LANGUAGE REQUIRED

Students entering the University of Illinois will be required to have two years of high school study in a foreign language, effective in September, 1964, according to President David D. Henry. When the rule becomes effective, only students entering from high schools not offering foreign languages will be exempted. The requirement for admission will be fulfilled by two units of any foreign language in which the University offers instruction.

BASIC SCIENCE EDUCATION NEEDED

Dr. Alan T. Waterman, director of the National Science Foundation, has declared that the nation must provide education in basic science broad enough to enable scientists to shift their attention and activity as needs dictate. Dr. Waterman, who spoke at a conference of the National Manpower Council in Harriman, N. Y., said it was impossible to anticipate with confidence which fields of science will be the most significant in the future.

MOVEMENT AGAINST DELINQUENCY

Governor Rockefeller of New York State has called for a state-wide movement against juvenile delinquency. The proposed program includess new youth work camps, speeding construction of more detention facilities, and an increase in probation and parole supervision.

Mr. Rockefeller said he could not estimate the costs of the new state program. But he reported that it is costing the state $2,800 a year for each of the 100 or so youths in the two existing camps. He said he hoped to get this down to $1,900 or $2,000 a year to maintain a youth in a correctional institution. The state program also seeks a more effective apprenticeship training program for 16- to 18-year-olds by cooperation among industrialists, union leaders, and the state labor department.

RURAL TEACHER SALARIES IMPROVE

Teachers in city schools earn about 25 per cent more a year than do the country-school teachers, according to a survey published by the National Education Association research division.

The country teacher averages $4,013 a year and the average teacher in a city school earns about $5,313, according to the report. This is an improvement for rural teachers. The report noted that 25 years ago, country teachers received only about 45 per cent of the average salary

(Concluded on page 48)

ADVISORY COMMITTEE

(Concluded from page 27)

struction in all parts where the fire code permitted, was whether brick veneer or wood siding should be used. After extended consideration, the board directed that brick should be used around bus loading areas for low maintenance cost and around the entry ways for ornamentation but that wood siding should be used elsewhere. The contractors concurred in this decision. However, it was agreed that an alternate should be taken on brick veneer for the entire structure.

Aluminum-Wood Sash Controversy

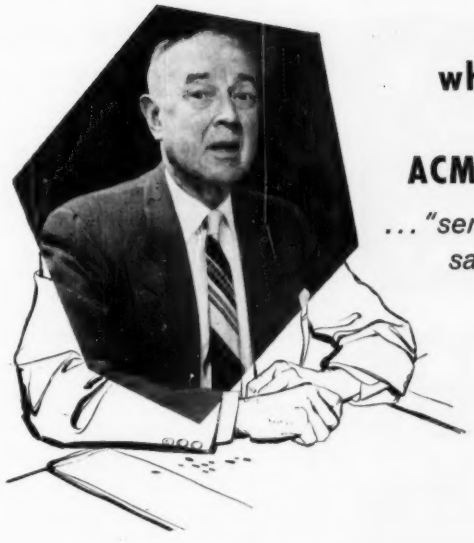
The major "controversy," was over whether aluminum or wood sash should be used in the structures.

After listening to the advantages of both sash materials, the board directed that an alternate bid be included for wood sash with the bid for metal sash. When bids were opened, it was found that the aluminum sash was actually less, and the buildings were constructed with metal sash.

Evaluation of Committee's Work

As one evaluates the work of the contractors' advisory committee, several things stand out. The buildings were constructed at lower than state average costs per pupil and per square foot for the class of building, and they were better buildings than were usually obtained for the cost. The low initial cost for the kind of facilities provided attracted both state and national attention. From the standpoint of the school district's maintenance personnel, the materials used represented the very best that could be obtained for the money available for these buildings. They were also better than had been secured in previous buildings. An important factor also, from the staff's standpoint, was that both buildings incorporated relatively simple and trouble-free mechanical and electrical systems.

The committee certainly justified itself also from the community standpoint. Criticism of the buildings was reduced but not eliminated; it was redirected to the educational facilities provided since there was little basis for criticism of design, materials, or cost. It was generally recognized that a great deal had been secured for each building dollar, much more than in most other school buildings in the state. Perhaps the greatest value was that some who had been critical now recognized that they had an open-minded board and staff that were willing to seek and use help from experts in building. ■



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SCHOOL SCENE

(Concluded from page 46)

paid to urban instructors. In 1950, they were 29 per cent below.

School supervisors are beginning to catch up percentage-wise to teachers in salary increases, says the report. Whereas teachers' wage increases once were relatively larger than supervisors', the higher-ups now show about the same rate of gain.

Last year, the survey said, the average city superintendent was paid twice as much as the average classroom teacher; the high school principal earned a little more than half as much again as the classroom teacher, and the elementary principal earned about 45 per cent more.

FINDINGS CONTRARY TO ABILITY GROUPING

In New York, N. Y., Dr. David A. Abramson, research associate of the board of education's bureau of research, as a result of a survey, has reported that high I. Q. students grouped in special classes did no better in college than equally bright students attending comprehensive high schools with heterogeneous grouping.

Dr. Abramson's findings are at odds with the contentions of many other educators, who placed high value on ability grouping as a means of stimulating scholastic achievement of talented students. Dr. Abramson said there were no marked curriculum differences among the four schools during the period of study. All four had used a wide variety of enrichment techniques, including extensive reading, special projects and research, techniques, and emphasis on creative work. In the study, Dr. Abramson used selected students, graduates of four high schools, who had completed their sophomore year in a liberal arts college program.

LANGUAGE ADVISORY COMMITTEE APPOINTED

Commissioner of Education Lawrence G. Derthick has appointed a 12-member national advisory committee to assist the Office of Education in its program for improvement and extension of foreign language instruction in schools and colleges. The committee will be concerned with the language development program, authorized by the Title VI of the National Defense Education Act. The program includes institutes for teachers of foreign languages, and centers for improvement of instruction in languages not taught in the United States.

TELEVISED COURSES FROM HIGH ALTITUDE

A nationwide search has begun for outstanding teachers of courses to be televised from a high-altitude plane to a potential audience of five million students in six Midwest states.

Plans call for production of as many as 24 full-length courses, each consisting of 144 half-hour lessons, during the first year of the experiment, which will probably begin with the 1960 fall term of school, according to the Midwest Council on Airborne Television Instruction, that is undertaking the $7 million, two-year experiment.

Eventually, the Council intends to telecast as many as 72 courses from a DC-7 aircraft flying at more than 20,000 feet over north-central Indiana and covering parts of Indiana, Illinois, Wisconsin, Ohio, Michigan, and Kentucky, which contain five million students in 13,000 schools and colleges.

Courses will be recorded on video tape at production centers around the nation. These taped courses, and possibly some "live" ones, then will be beamed from a ground transmitter at Purdue University, Lafayette, Indiana, to the circling DC-7 and re-telecast by UHF transmitters in the aircraft to classrooms in schools throughout the region.

Most of the courses will be for elementary and secondary schools, but a few will be offered at the junior and senior college levels. Individual schools and colleges will participate on a voluntary basis.

CONANT RELUCTANT ABOUT FEDERAL FUNDS

In his address to the Advertising council in New York, James B. Conant, president emeritus of Harvard, expressed serious reservations about centralizing control over American education. "I am not," he said, "one who believes that large scale federal funds for public schools can be made available without some federal influence, nor do I believe such appropriations are right around the corner."

Concentration of authority over schools, Dr. Conant warned, would result in "leveling down the best in order to raise the worse," and would have other dangerous possibilities — loss of variety and experimentation, and state-wide deterioration of state boards "became political," as they might.

The NEA reported it would campaign to mobilize public opinion in favor of new Congressional action on Federal aid to education.

RACE IGNORED IN PUPIL PLACEMENT

Student assignments beginning next September 1 will be made in accordance with pupil placement rules without regard to race or color, the Atlanta school board proposed recently.

The proposal was sent to the United States District court as evidence of compliance with a court order for speedy integration. The proposal is contingent on changes in state laws which now require pupil assignment on racial lines.

The plan sets up psychological and intelligence factors for admissions and transfers and requires that consideration be given to the effect of placements on peace and economic well-being.

STUDENT LOANS IN MILLIONS

Loans to college students under the National Defense Education Act amounted to $47.5 million for the fiscal year 1959. Funds requested for the year 1960 amount to $31 million.

To date the Office of Education has distributed $30,617,337 to 1192 colleges and universities for student loan purposes. The number of participating institutions has increased to 1,372, and funds requested for 1959–60 total $41 million.

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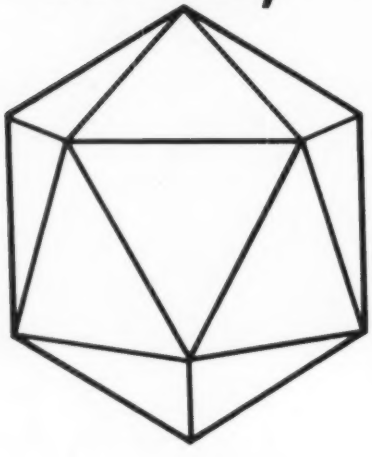

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But, to make absolutely certain that we weren't being carried away by our own enthusiasm, we asked a neutral expert... United States Testing Company.

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here are their published results...

(For more information from advertisers, use the postcard on page 57)

NOW...UNITED STATES TESTING COMPANY SAYS,

"Voit balls tested outlasted the nearest of four competitive brands tested by more than 3 to 1."

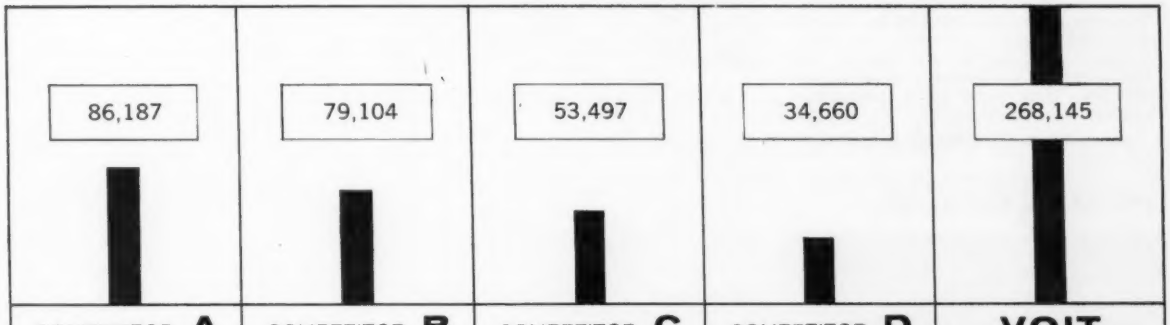
Sample balls, two each of five brands, were purchased on the open market. Care was taken to acquire balls of equal designated quality.

Balls were tested to failure or "unplayability" by continued bouncing through a roller-type testing machine.

Samples of Voit Icosahedron Balls far surpassed all other samples for cover wear, shape retention and durability.

The following table summarizes the quality standing of each ball with respect to the average number of cycles in the testing machine before failure occurred.

AVERAGE NUMBER OF CYCLES IN MACHINE



COMPETITOR A	COMPETITOR B	COMPETITOR C	COMPETITOR D	VOIT
COMMENTS Failure indicated by tear in cover.	*COMMENTS* At 50,000 cycles: Wear around valve and along black seam lines. At times, ball would not pass through machine. Failure indicated by wear around valve and major bulge on surface of ball.	*COMMENTS* Bulges on surface of ball at three locations.	*COMMENTS* Ball shows signs of excessive wear. Will not stay in machine. Failure indicated by cracks around valve and cords showing.	*COMMENTS* At 100,000 cycles: Identification letters and numbers worn off. At 225,000 cycles: No discrepancies noted. Only uniform cover wear. Failure indicated by bulge on surface of ball.

REPORT #51093; MARCH 25, 1959

This is the most recent in a series of product tests being conducted by the United States Testing Company. To assure its leadership, Voit continually has its products tested in its own laboratories, by field tests and by neutral experts.

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(For more information from advertisers, use the postcard on page 57)

NEWS of PRODUCTS for the Schools

RADIANT HEATED FLOORS

Radiantly heated floors have functioned effectively for 12 years at Cole School, Cheyenne, Wyo., keeping students toasty

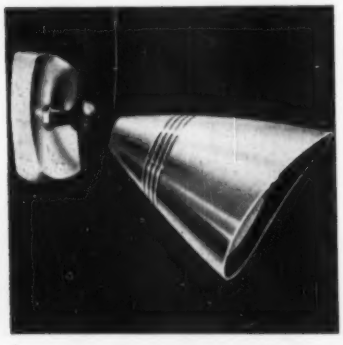
Pipes Buried in Concrete

warm, even on cold, damp days. The heating system, made by A. M. Byers Co., Pittsburgh, consists of 1¼ in. dia., corrosion resistant, wrought iron pipe spaced on 12 in. centers and buried in concrete flooring. Hot water, circulated through the pipe coils, heats the floor. A 2-in. concrete slab, tapped with terrazzo, separates children from the heating coils. This type of heating eliminates hot or cold spots and assures a pleasant, even temperature. According to the designer, the cost of the radiant heating is about 16 per cent less than steam in a comparable building.

(For Further Details Circle Index Code 01)

DECORATIVE FLOODLIGHTS

Completely weatherproof outdoor flood lights to be used on ceiling, wall, surface or custom mounting are made by Stonco Electric Products Co., Kenilworth, N. J.



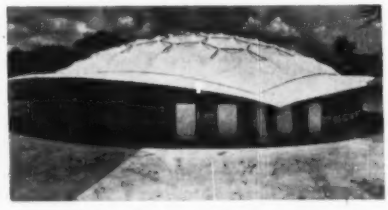
Indoor and Outdoor Use

The decorative lights are available in three bullet-shapes to accommodate up to 300-watt lamps. They can be mounted singly or in clusters. They are offered in a wide range of colors and finishes, including weatherproof satin finishes. They are made of corrosion-proof, die-cast aluminum with built-in aiming quadrants for easy, accurate pre-focusing. A compact, clip-on kit provides color effects for display, festive, or holiday lighting. All fixtures are fully UL-approved and CSA-approved for outdoor service.

(For Further Details Circle Index Code 02)

GEODISTIC AUDITORIUM DOME

A dome of stressed-skin Kaiser aluminum is the basic structure of this 800-seat school and community auditorium located at Pryor, Okla. The basic dome is 100 ft. in diameter with a ceiling 28 ft. from the sloping floor at mid-point. The stage is located partly under the dome, with the remainder housed along with dressing rooms, prop storage space, etc., in a canopy structure attached to the dome. Exterior lobby walls are glass from floor to under-



School Architectural Possibilities

side of dome. Special-effect lighting system is mounted on brightly colored acoustical baffles suspended from the dome. The underside of the dome is sprayed with a special coat of acoustical and thermal insulation. For full details write to Kaiser Aluminum & Chemical Corp., Oakland 12, Calif.

(For Further Details Circle Index Code 03)

GLASS TINTING APPLICATION

A new glass tinting product, a liquid plastic developed and manufactured by Du Pont, is offered as a sun control measure for all kinds of buildings. Sun-X Glass Tinting provides the convenience of factory-tinted glass at a fraction of the cost. It is especially recommended when renovation, remodeling and air-conditioning is contemplated. The unique liquid plastic is applied directly to the inside of windows to reduce fade, heat, and glare. Tests have shown that it will reduce the heat load through windows up to 82 per cent, and cut the ultra-violet rays which produce fading by as much as 99.5 per cent. Glare is cut down as much as 91 per cent. After the glass is tinted, the window can be washed in the same manner as before. The international distributor for the new product is American Glass Tinting Corp., Houston 5, Tex.

(For Further Details Circle Index Code 04)

GRADE SCHOOL DECORATIONS

Attractive porcelainized Calcore panels, made by Caloric Appliance Corp., Topton, Pa., decorate the outer walls of Children's Reception Center in Philadelphia. The

Porcelainized Panels

panels, executed by artist Jean Francksen, protray gay, colorful figures of fish, birds, and a running child. Tushe and glue stencils were used to present the softness of the design. Similar designs could decorate an elementary school. Calcore panels are composed of a porcelain face, cement asbestos board, and armalite core with a cement asbestos board backing. Send for more information on curtain walls.

(For Further Details Circle Index Code 05)

SEQUENCE HEATING CONTROLS

Smooth, gradual control of electric heat ventilators in schools and other large buildings is provided by the new pressure-electric switch from The Powers Regulator Co., Skokie, Ill., manufacturer of automatic temperature controls. The MS (Multi-Step) Switch uses a variable pneumatic signal to actuate as many as 10 electric heating elements in sequence for temperature level required. Ordinarily, a single electric thermostat cannot control all heating elements in sequence so a multi-step device must be used to activate the many unit ventilators in a system. As heat is needed, the MS switch activates each unit ventilator. When temperature rises, the switches return to a normal "off" position. MS can be mounted on or away from the main unit. It measures 8 by 12 by 14 inches. Individual switches are replaceable without moving or disconnecting other parts.

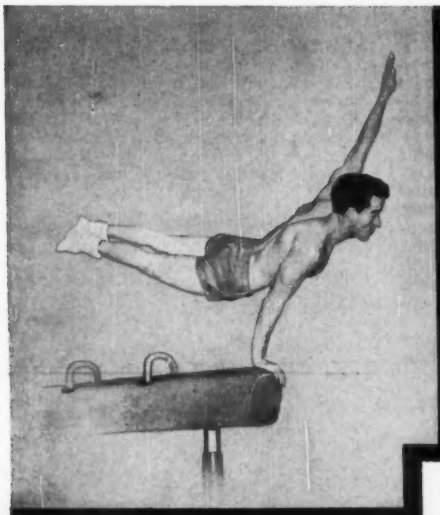
(For Further Details Circle Index Code 06)

MAGIC FOLD TABLET ARMCHAIR

BeLA Division, J & J Tool & Machine Co., Chicago 28, has introduced a new line of BeLaire chairs for schools, churches, and institutional use. Included is the new

(Continued on page 54)

CORRESPONDING CODE INDEX NUMBERS TO BE ENCIRCLED CAN BE FOUND ON THE CARDS IN THE READER'S SERVICE SECTION



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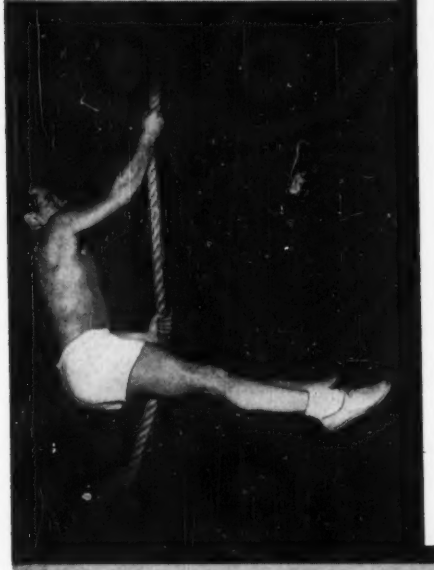

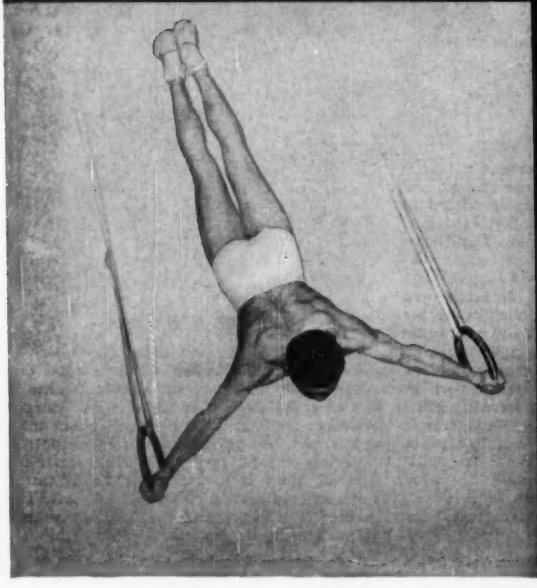

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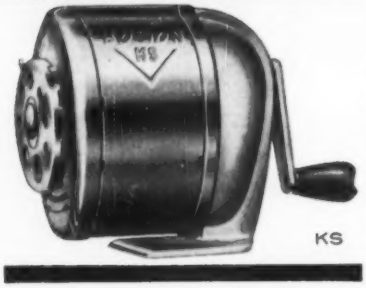

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BOSTON

E. HOWARD HUNT PEN CO. CAMDEN 1, N. J.

News of Products . . .

(Continued from page 52)

patented Magic Fold tablet arm chair, a folding chair with tablet arm that converts in a single action fold. It is available in a choice of 25 steel, plywood, upholstered, or foam seat styles with plywood or plastic tablet arm. Frames may be ordered in a choice of seven baked enamel colors, and chrome or gold-bronzed plating. The Magic Fold chair also features a non-tip safety design, and self leveling gliders. A multi-coutoured plywood seat and back is available in walnut or natural finishes. Another featured chair is the BeLA sculptured fiberglass seat with modern tubular frame designed for ultra-modern seating requirements. Additional information available from the manufacturer.

(For Further Details Circle Index Code 07)

CLASSROOM SINK

The new stainless steel, classroom sink from Jensen-Thorsen Corp., Addison, Ill., is made in single and double bowl models.

Available in Two Sizes

The sturdy fixture is designed primarily for kindergarten and elementary grades. Rounded sink contours prevent soil and bacteria from collecting. Maintenance requires only soap and water in most cases. Two sizes are available, 18 by 24 inches and 32 by 31 inches. Send for full information.

(For Further Details Circle Index Code 08)

COOKER-MIXER KETTLE

A line of versatile "cooker-mixer" steam kettles designed to speed mass feeding and volume preparation of foods is offered in standard 40, 60, and 80 gallon capacities by Groen Mfg. Co., Chicago. The Groen Model DTA-2 Cooker-Mixer kettle has a double agitator for slow or fast mixing; when agitators are not used the kettle may be operated as a conventional or tilting steam cooker. Agitators, easily removable for fast cleaning, feature a special spring lift design that swings the agitator unit out of the way when the kettle is used as a cooker. Women operators have no difficulty tilting the unit. A safety cutout switch prevents rotation of agitators when unit is in a tilt-out position. The unit saves costs on time and labor in the production of mashed vegetables, chili, stews, creamed dishes, puddings, etc. Send for specifications.

(For Further Details Circle Index Code 09)

EXERCISE STAND FOR CHILDREN AND ADULTS

A minimum of space can become a recreation area with the new Stamm's Gym, a product of Jarke Mfg. Co., Chicago 48, Ill. Designed for indoor or out-of-door use, the exerciser is constructed of lightweight steel tubing with a wide leg

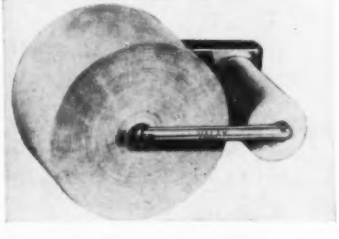
Will Not Tip or Skid

construction that prevents tipping or skidding on any surface. It is strong enough to support two adults and has a three-way size adjustment to serve both children and adults. The gym folds to 42 by 84 by 4 inches. An illustrated brochure from the manufacturer describes many exercises possible for beginners, men and boys, and women and girls.

(For Further Details Circle Index Code 010)

TOILET TISSUE DISPENSER

The Valay Multi-Roll tissue dispenser does away with storage cabinets, core tissue rolls, and theft of dispenser or rolls. The double roll fixture prevents tissue waste and litter, never runs out of tissue and cuts maintenance time in half. It holds two 2500-sheet, coreless tissue rolls or standard core rolls. It is marketed through a no-cost leasing plan with Valay service, by the Stevens & Thompson Paper Co.,



Always a Spare

Greenwich, N. Y. The double-hinged dispenser of heavy-gauge aluminum has a steel spindle roll that unlocks and extends easily for refilling. Fixture locks automatically. A spring tension device controls dispensing and protects against theft. No larger than standard single roll fixtures, it can be mounted either right or left. The heavy steel backplate has a black enamel sprackle finish. Send for leasing details.

(For Further Details Circle Index Code 011)

"Stationary" racks in single or double face units snap-lock rigidly together to fit any space or provide capacity required.

Checker

COAT and HAT RACKS

Style D.F. 4-40. Portable Checker Rack (illustrated) is 4 ft. 3 in. long; holds 40 coats and hats; goes wherever needed on large, ball-bearing-swivel casters. Comes with or without checks and snap-on numbers. Strongly welded of square tubular, heavy gauge and highly embossed furniture steel. Smart in modern baked finishes. Give lifetime service — never sag, creak or sway. 3 ft., 4 & 5 ft. units available, as well as other efficient space saving equipment for every church, school, commercial, industrial and institutional need.

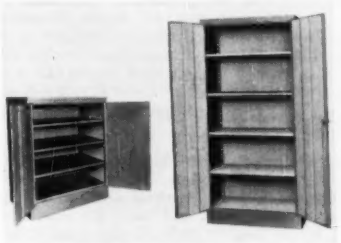
Write for Bulletin CK-206

VOGEL-PETERSON CO.

Rt. 83 and Madison St., Elmhust, Ill.

TWO STORAGE CABINETS

Two cabinets with swinging doors that open for full accessibility are made by Borroughs Mfg. Co., Kalamazoo, Mich., a subsidiary of American Metal Products



Adjustable Shelves

Co. The new cabinets measure 36 in. wide by 21 in. deep, and available either 42 in. or 78 in. high. The doors have a single heavy-duty handle, with lock. Shelves adjust without tools, nuts, or bolts, on two inch centers. The 78 in. unit is available in three models — storage, combination, and wardrobe. The 42 in. unit is counter-high so the top provides extra working space. Write for more descriptive literature.

(For Further Details Circle Index Code 012)

(Concluded on page 56)

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Spike the "Spike" THREAT

1 Ton per sq. in. — That's the dent which a 125 lb. female, teetering on today's ¼" "spikes," makes! — No wonder those thin-skinned floorings can't take P.T.A. meetings any more!

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(For more information from advertisers, use the postcard on page 57)

CATALOGS & BOOKLETS

The **E. H. Sheldon Equipment Co.**, Muskegon, Mich., is offering a 32-page Junior Science catalog which contains guides for setting up and using a junior science room. Send for a free copy.

(For Further Details Circle Index Code 013)

A new catalog, No. 1612, on Safway Spectator Seating will be sent free of charge by **Safway Steel Products, Inc.**, Milwaukee 13, Wis.

(For Further Details Circle Index Code 014)

A new slide film on "Safe Shower Systems" is available from **The Powers Regulator Co.**, Skokie 3, Ill., for showing to school boards. Send for complete details on the film and for a free illustrated booklet on "Safer Showers."

(For Further Details Circle Index Code 015)

Claridge chalkboards, bulletin boards and aluminum trim are illustrated in a new, full-color catalog, No. 3129. Send for a free copy from **Claridge Products and Equipment, Inc.**, Harrison, Ark.

(For Further Details Circle Index Code 016)

A free, descriptive brochure on the complete 20-volume set of Collier's Encyclopedia will be sent by the Educational Division of **P. F. Collier & Son Corp.**, New York 19. The company offers its encyclopedia on a 30-day trial basis.

(For Further Details Circle Index Code 017)

"Wall-A-Way" folding partitions made of vinyl or "Toroply" can cut maintenance costs by 75 to 80 per cent, according to the manufacturers, **Torjesen, Inc.**, Brooklyn 32, N. Y. Send for a detailed catalog.

(For Further Details Circle Index Code 018)

The Ez-A-Way line of mechanical folding bleachers and chair stands is illustrated in a 16-page catalog from **Berlin Chapman Co.**, Berlin, Wis. It includes descriptions of electrically operated basketball backstops, and automatic combination basketball and golf practice cages.

(For Further Details Circle Index Code 019)

Maple Flooring Manufacturers Association, Chicago 1, Ill., offers free copies of the new specification manual for Northern hard maple, beech, and birch flooring. The A.I.A. file booklet includes the latest complete grading rules established by the association.

(For Further Details Circle Index Code 020)

Aluminum chain link fencing for schools and civic recreation areas is detailed in a 12-page booklet from **Kaiser Aluminum & Chemical Sales, Inc.**, Oakland 12, Calif. According to the manufacturer, the installation cost of aluminum chain link fencing is comparable to other types.

(For Further Details Circle Index Code 021)

The Balanced Door, made by **Ellison Bronze Co., Inc.**, Jamestown, N. Y., glides into an open position parallel to the door jamb, thus requiring a shorter arc for fast opening and closing and reducing outward projection by nearly 50 per cent. It features a semi-automatic hold-open device. Send for A.I.A. brochure.

(For Further Details Circle Index Code 022)

Copies of a unit ventilator control application manual are available from **Barber-Colman Co.**, Rockford, Ill. It gives full details on the firm's line of electric controls for hot water, steam, gas-fired, and electric unit ventilators.

(For Further Details Circle Index Code 023)

A guide to weatherstrip materials and approved installation methods is offered by the **Zero Weatherstripping Co., Inc.**, New York 54, N. Y. The A.I.A. catalog gives information on all types of weatherstripping for institutions and homes, including suggestions for writing building specifications.

(For Further Details Circle Index Code 024)

A pre-cast masonry construction system that provided fire-safe, speedy construction of two Air Force Academy residence buildings is described in a 6-page folder from **The Flexicore Co., Inc.**, Dayton 1, Ohio. Send for a free copy of the illustrated folder.

(For Further Details Circle Index Code 025)

Fourteen new decorator colors in Wright rubber tile flooring are illustrated in a colorful folder from **Mastic Tile Div.**, The Rubberoid Co., Vails Gate, N. Y. Send for a copy.

(For Further Details Circle Index Code 026)

MANUFACTURER'S NEWS

The **Hamilton Manufacturing Co.**, Two Rivers, Wis., has announced the purchase of the **Haldeman-Homme Manufacturing Co.**, St. Paul, Minn. The purchase includes all patent rights and production facilities for the manufacture and sale of Erickson portable folding tables, stages, and choral risers.

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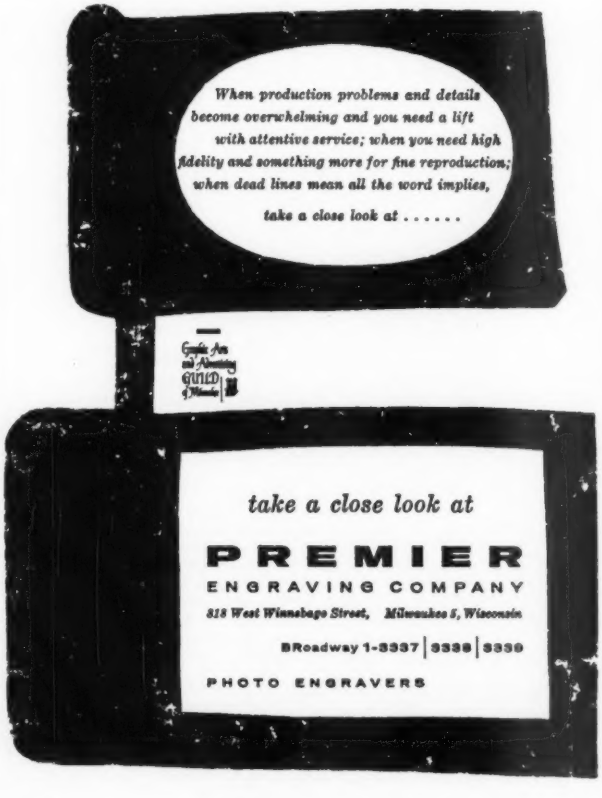
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READER'S SERVICE SECTION

INDEX TO SCHOOL EQUIPMENT

The index and digest of advertisements below will help you obtain free information, catalogs, and product literature from the advertisements and companies listed in the new products section. Merely encircle the code number assigned to each firm in the request form below, clip the form and mail it to THE AMERICAN SCHOOL BOARD JOURNAL. Your request will receive prompt attention.

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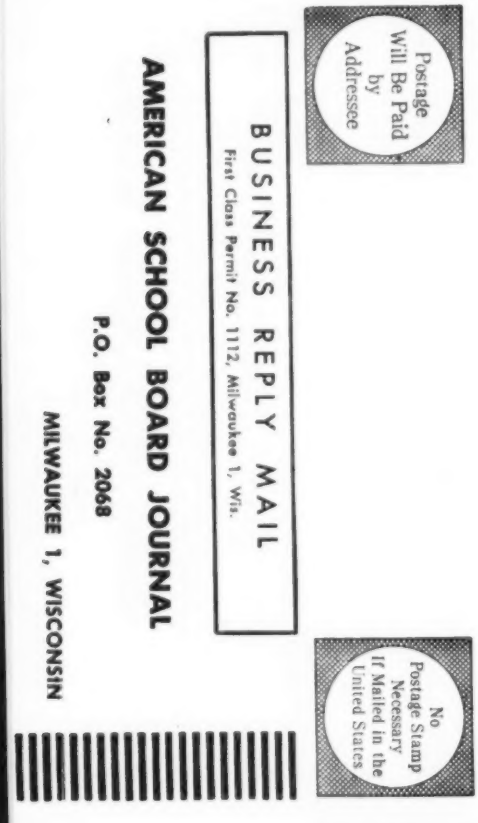
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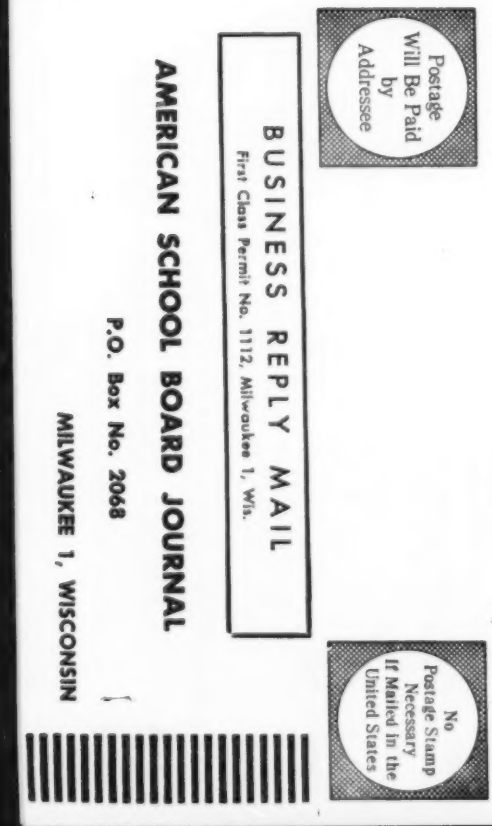
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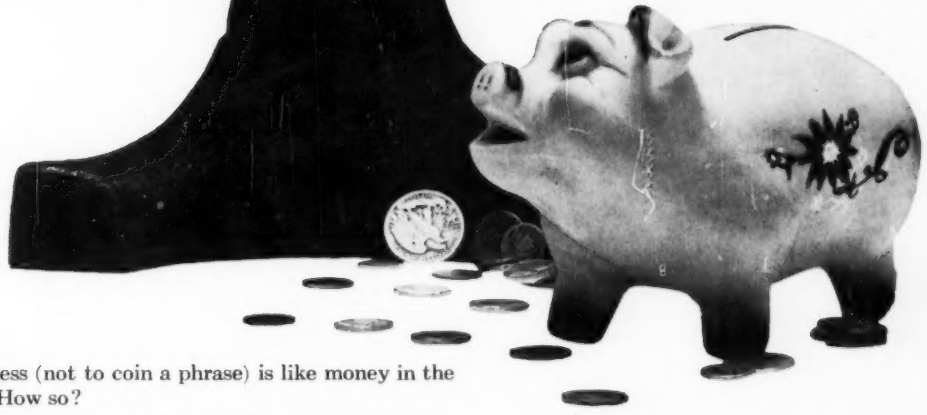

Royal ruggedness (not to coin a phrase) is like money in the bank for you. How so?

Royal's tougher construction means less money spent for service—longer typewriter life—higher resale value (used Royals bring up to 24% more than other makes).

And in schools—where time is money—timesaving Royal features such as MAGIC® MARGIN and TWIN PAK® Ribbon speed up training—make typing easier to teach, easier to learn.

That adds up to lower *total* typing costs—with Royals.

No wonder more than half of all typewriters in use in the nation's classrooms are Royals.

To see how Royal lowers *total* typing costs, ask your Royal Representative for free Value Analysis forms *you fill out yourself*. Compare other makes point by point with Royals.

ROYAL® *standard*

Product of Royal McBee Corporation,
World's largest Manufacturer of Typewriters

THERE ARE MORE ROYAL TYPEWRITERS IN SCHOOL AND OFFICE USE THAN ANY OTHER MAKE.

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Hillyard Super HIL-TONE® FLOOR DRESSING

SAFEGUARDS against FIRE HAZARDS

Safe on the Floor—Safe in the Mop—Safe in Storage

1 No possibility of spontaneous combustion—

SUPER HIL-TONE is chemically "non-oxidizable" — that is, it can't absorb oxygen when exposed to air, the common cause of heating and spontaneous combustion with widely used, dangerous oily floor dressings.

2 It's fire-retardant—

In official tests, using the "TAG" Closed-Cup Tester, SUPER HIL-TONE failed to show flash point at temperatures up to 175° F. In fact, SUPER HIL-TONE *discourages* fire. Ask the Hillyard Maintaineer to demonstrate this important property.

LISTED UNDER UL REEXAMINATION SERVICE OF UNDERWRITERS' LABORATORIES, INC.

3 "Classified as to fire hazard"

Floor oils leave a 100% residue that penetrates to create a dangerous fire hazard. Super Hil-Tone is non-oily. — After sweeping only a 20% protective residue is left to condition and protect the surface — keeps finishes from drying out and becoming brittle. A Super Hil-Tone wear resistant film strengthens the finish and enhances it with a deep, lustrous sheen.

By unique AD-SORPTIVE action, holds dust on the floor surface for fast, efficient removal. Reduces the count of dust particles kicked up by passing feet. Sweeping goes fast and easy; frequent scrubbing is not necessary. It's the answer to your problem of cutting labor time in sweeping, without sacrifice of sanitation, appearance, or safety.

Ask the Hillyard "Maintaineer®" for expert advice on more effective floor maintenance. He's a trained floor care specialist, *"On Your Staff, Not Your Payroll"*

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